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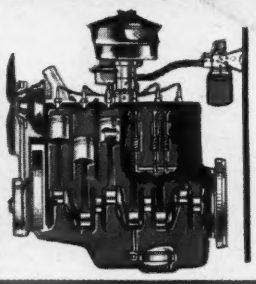

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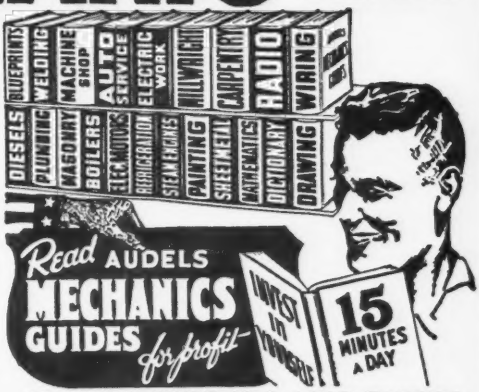

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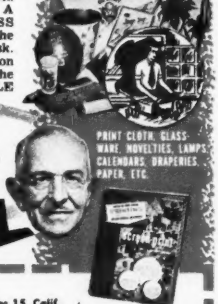

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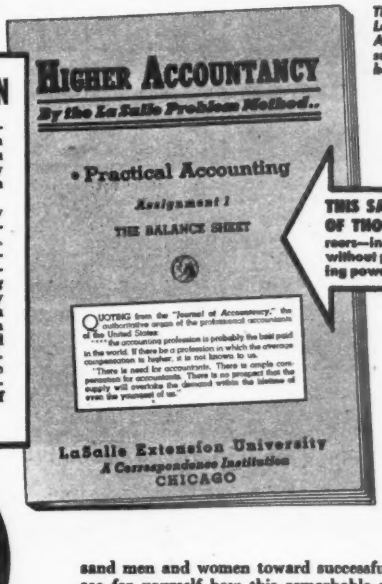

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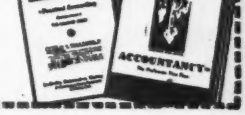

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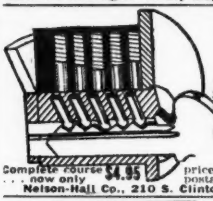

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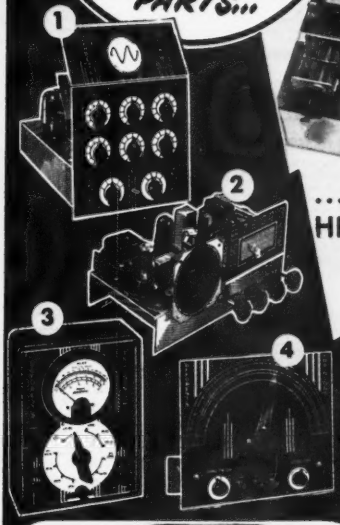

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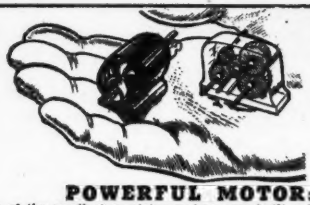

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The Editor's Workbench

People Going Car-azy

My special agents, strategically placed in key spots all over the country from Mattawamkeag, Maine, to Study Butte, Texas, tell me the marriageable young girls are pretty bitter these days. They go out on a date and what do the boys talk about? Love? Canasta? The new show down at the Bijou? Nah. All they yak about is full-race camshafts and milled heads and twin pipes with Hollywood mufflers. The lads have gone car-azy, the girls say, and if things keep on the way they're going nobody'll ever get married any more because Lover Boy will never get off the subject of automobiles long enough to pop The Big Question. (That'll be bad?)

And it's not only the hot-footed young bachelors who are going for automobiles like they never existed before. Ancient gaffers you'd never suspect would be interested in anything more sensational than how to break 120 at golf or where to plant the tulip bulbs next spring, are giving the family sedan the full-house treatment. Or dickering with Farmer Brown for that beat-up 1913 Model T he's had stored in the barn for 20 years. Or, if the bank roll can't stand such hobbies, loading up the living room with scale models of antique cars and with lamps, ashtrays and hookah pipes decorated with pictures of same. I tell you, brother be-bops, it's real mad the way the automobubble has come back into its own.

And if you have caught the infection along with everybody else, you better tell the local newsstand guy right now to reserve you a copy of the first issue of CARS, a truly gone magazine about hot rods and stock cars and sports jobs and everything else having to do with the horseless carriage. This new and entirely different book goes on sale January 14, it sells for two bits and it's edited by us geniuses of (y)our favorite magazine, dear old MECHANIX ILLUSTRATED. We think it's the real best, the first popular car magazine that covers the whole field for everybody, not just the specialists.

And speaking of firsts, as the first of a new year looms ahead I'd like to make mention of another first for which good old MI can take credit, even though most of our distinguished competitors seem to have forgotten it. This was the institution of our now celebrated car test series which Uncle Tom McCahill started here back in 1946. Tom was the pioneer, the first guy to pick up the cudgels for the bloke like you and me who wants the real lowdown on the new cars from a genuine expert who isn't afraid to swing a roundhouse punch at the automobile manufacturers and their products when he thinks such criticism is warranted. The magazine woods are full of self-styled "experts" who followed the trail blazed by Uncle Tom and are trying, in a half-baked kind of way, to imitate the old master. Tom was the first—but more important, he's still the best. And he's still the only one who has the gumption to lash out with both fists at weaknesses in the new cars when he sees them—and the guts to risk criticism from the wise guys who snarl "Who paid *you* off?" when, as does betimes happen, he praises features he admires in a new model.

Well, has Tom's stuff produced any good, tangible results by needling the Detroiters to improve their breed of carflesh? It has. The now famed Rocket engine, originally slated for the Buick line, went into the Olds chassis partly as an after-effect of Tom's lambasting the '48 Futuramic's outdated, under-caloried power plant. The old champ wiped blood off his noggin for months after he criticized the '52 Lincoln for being underpowered. But the '53 Lincoln received a big transfusion of horsepower and will be about the hottest thing on wheels next year.

Uncle Tom has been waging practically a one-man war on the dangerously mushy cornering weaknesses of today's cars—and there are visible signs that Detroit has become cornering-conscious as it hasn't been for years, a very fine thing for all.

There are many more examples. Detroit respects Tom McCahill's opinions, now, because it has found out that the people, the you's and me's who buy automobiles, respect him. Detroit can't afford to ignore Tom—and it doesn't. Not when folks are as interested in, and intelligently critical of cars as we are today.

Yet, it's a car-azy country. And I think that's swell. And I also think that 1953 is going to be one of the best and most exciting years we've ever had in the automobile line. If you're gonna be around, keep an eye on it.

See you next month.—*Bill Parker.* •

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

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Soldering Torches and Blowpipes

SO extensive and varied are the uses to which a suitable torch can be put that it is surprising inventors have not come up with more modern versions. This is not because of any shortage of patents in this field. On the contrary, thousands have been patented but most of them represent modifications of the same general types. Earliest of the patents examined for this article was issued in 1856; most recent was granted only a few months ago.

As nearly as we were able to learn from an examination of the records, none of the devices furnishes the type of controllable hot flame so much desired. Perhaps the best example of what is thought to be good may be found in the flame produced by an oxy-gas torch or a laboratory blowtorch. The latter is really like the burner in your gas stove with a central tube through which controlled air under pressure may be admitted. By controlling both the fuel gas and air the operator can produce a sharp pin-point flame an inch long or may change it quickly to an eight-inch-long flame fully an inch in diameter, or can cut off the air entirely to give a yellow, smoky flame of considerable value in annealing. By slipping metal fittings over the open end of the burner, an operation which takes only a second, the flame may be modified to become very large in diameter or may be spread wide through a fish-tail fitting.

This is a good torch but it has two requirements: a source of manufactured or natural gas and a supply of air or oxygen, both available in large quantities and under fairly constant pressures.

For many shops this poses a problem. They do not have a gas supply. In others where this is available there is no easy way to tap off for torch operation. In some areas cooking fuel is available in compressed gas cylinders. Air or oxygen can be similarly supplied, but each tank demands an expensive reducing and control valve. In many cities special permits are needed to store compressed gas containers.

This expense and inconvenience may be justifiable in a large machine shop. It is completely out of line when considering the use to which the equipment might be put in the home workshop or by a jeweler, physician, experimental glass worker and others! When hose connections need to be made to such tanks for hand torches to be used for brazing or paint burning the cost of hoses and their weight must be considered. Nevertheless, this combination does hold a great advantage. Both the temperature of the flame and its control are excellent. If these virtues could be approached by other methods less expensive and less troublesome, an excellent, saleable product would result.

Most of the torches which have been patented specify the use of a fluid hydrocarbon. Some of the patents indicate that the fuel is to be put under pressure by an air pump which forces the fuel from the chamber through the burner jet first as a liquid then as a vapor. Typical of this construction is the common plumber's torch with which nearly everyone is familiar. Similar constructions are used on stoves, for example the popular Coleman burner. A patent for this was granted in December 1922 to William C. Coleman. The explanation of its operation is typical for devices in this group. It reads: "This invention relates to stoves for burning hydrocarbon fuels in which the fuel is put under pressure and admitted to a mixing zone where the air necessary to provide the requisite amount of oxygen to support combustion is mingled with the hydrocarbon content of the fuel to make an ignitible mixture."

Although the plumber's torch is a very valuable tool, everyone familiar with its operation knows how impossible it is to sharpen the flame to a point so that the heat can be applied to a small spot.

[*Continued on page* 22]

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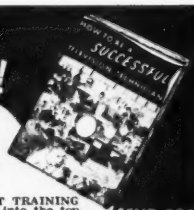

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Invention Clinic

[*Continued from page* 18]

Sharper flames are possible by a second group of torches which also include the blowpipe styles. Generally alcohol is the fuel specified. In some of these the torch is self-pressurized. In others a second fuel container is heated by the flame from the first container to furnish the gas under pressure for the jet. In a third group the flame is given added air supply from a tube leading to the mouth of the operator.

The self-pressurized devices produce an irregular flame which spreads over a considerable area. Pin-pointing is impossible. Under absolutely ideal conditions the torches with the parallel or duo-type generators provide a pointed flame. However in actual practice this ideal is difficult to maintain. The slightest breeze or shift in position of the torch varies the flame often producing an alcohol sputter which rapidly cools the work. Try to use such a torch for glass working and you will learn about breakage.

Torches with air supply from the mouth are easier to control for small spot work. Even more effective, perhaps, is a large plumber's candle fitted with a blowing tube. It seems to give more heat than alcohol, probably because of the greater hydrocarbon content of the fuel. At least, this has been the writer's experience. On this score it would seem that the possibility of using solid fuels might offer a lead for investigation.

Prior to 1867 many of the patented torches specified a means for generating steam which

[*Continued on page* 24]

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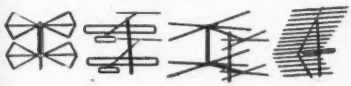
Contains special tube diagrams that spot faulty tubes immediately . . . a complete section on antennas . . . interference . . . covers T.V. set models from 1947-1952 . . . all makes . . . all sizes.

When you check your trouble and find that it is due to a faulty tube, you are led right to it. You simply find the diagram for your set and the one (or more) tubes you are to check—and **THE ONE TO REPLACE** are pinpointed for you! You are directed right to it. No blind guessing or hunting for the bad tube. **ONLY IN THIS BOOK,** has there been developed a special identification method to make it a cinch to locate the bad tube. Each tube in each diagram not only carries its usual trade identification number, but also a special letter to identify its function and location as well. It's (1) find the trouble, (2) find the tube, bingo, (3) replace the tube—and that's all there is to it!

Which Type of Antenna Is Best for Your Set

The special chapter on antennas explains what an antenna is supposed to do; the reason for the different shapes and arrangements; the reason for "stacking" and multiple antennas; how to "orient" an antenna for best reception; the need and use of a "rotator"; the special antennas for "fringe" areas; how to install, change or add antennas and parts; information on complete antenna installation kits which are available. Just about everything practical that you need to know about antennas.



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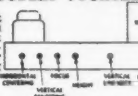
Turn your set around. You will find in the back of it an arrangement of "rear controls" looking like this:



Zags on Your Screen

Now, if you are troubled with these zags on your screen, locate Hor. Syn. on the above rear panel. Turn control slowly to right. Zags will appear even stronger. Turn control slowly back to left. Zags will disappear and you will have a perfect picture on your screen. That's all there is to it. You have made a $5 repair in less than 5 minutes.

A few other repairs that you can make yourself without tools, without any special knowledge, just with the help of this new TV Owner's Self Repair Book.

Picture Weak, Gray, Lacking in Contrast.

Sound and Picture Not in Step, Sound Not Good When Picture Is Best.

Picture Not High Enough to Fill Screen Top to Bottom.

Jumpy Picture

Dark Fuzzy Picture

No Picture, Sound Okay

6 Easy Ways to Eliminate Interference

In the TV Owner's Self Repair Book there is a unique chapter devoted just to elimination of interference. This chapter tells you just what "interference" actually is. It describes and illustrates the interference symptoms or patterns which appear on your screen in the form of diagonal lines, vertical lines, herringbone or hyphens all over the screen, etc. **This chapter gives you the easy ways to eliminate interference, doing it yourself in a few minutes.**

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Invention Clinic

[*Continued from page* 22]

was directed across the flame of an alcohol lamp. The first entirely alcohol torch we came across was patented in 1875. It pictured a small flame heating the bottom of a generator containing alcohol. The vapors then were conducted by pipe through the second flame. A depression in the bottom of the generator would allow for effective heating even when the torch was tipped at a considerable angle.

One of the early parallel self-generator type alcohol torches, still popula today, was patented by Michael P. Friday, in 1899. Patent number is 626,603.

A "Means for Producing Pointed Flames" was patented by T. P. Doane in 1884. This resembles a plumber's torch with a double cone-style nozzle set in front of the burner to concentrate the heat.

A bellows introduced into the base of a burner was protected in 1872. A more modern version might suggest a motor-driven blower in the base of the torch. This could easily be coupled to an electrical outlet. We didn't run across this idea among the patents, but this should not imply that it does not exist. Maybe inventors are wise not to cover the thought without first attempting to lick the problems which attend such a construction.

A blower does not supply air at a constant enough pressure. The flame tends to sputter. Hence some form of ballast is required. An equalizing bellows, bladder or other device is both troublesome and in the way. Furthermore, a suitable pressure cannot be built up in a conventional centrifugal blower, particularly when there is need for reducing the air supply even to zero. A proper design here would call for clear thinking and much experimental development.

Another angle would be to attempt to supply oxygen by chemical reaction. Most of the methods for doing this are expensive to main-

[*Continued on page* 45]

INVENTORS

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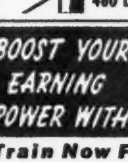

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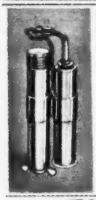

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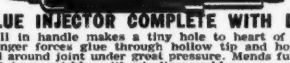

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This amazing miracle finish is of inestimable value for use on hundreds of manufactured products. Flok-Kraft offers you a way to big, extra money, assisting manufacturers in many lines as well as filling a big demand on the home front.

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Please rush me FREE details, sample, etc., I understand that everything you send is free and that I'll be under no obligation now or ever.

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Dear Editor—

Use this letters column as you see fit—make it a complaint box, question box, suggestion box or even a soap box. But use it! Our only requirement is that you sign your name and keep 'em short, interesting and clean. Address mail to: MECHANIX ILLUSTRATED, Letters Editor, 67 West 44th Street, New York 36, N. Y.

Safety First in Hudson?

Enclosed find snapshot to prove Uncle Tom's statements that the Hudson is a safe car.

This particular Hudson, containing four passengers, went out of control after having been crowded off the highway, ran up an embankment, rolled end over end seven times and slid 167 feet on its top. Not one person was seriously injured, just minor cuts and bruises!

Herbert Wills
Quinwood, W. Va.

Well, It Rhymes!

McCahill's the man with the low-flying Jag
Who never lets the speedometer lag.
Of driving you can say he's King
He's at home in a Jag or anything.
(Y)our Magazine has taught me all this
But if I knew one more thing, I'd sure be in bliss.
For about this I wonder and ponder and fret:
Why ain't he broken his darn fool neck yet?

Ivan Bennett Berger (aged 13)
New York, N. Y.

The answer, young fellow, is quite simple we feel:
Tom may be a joker—but he's an ace at the wheel.

Letters Editor (aged)

MI Mystery Solved

Here's the answer to MI's Monthly Mystery in the November Dear Editor column.

1. Jones lives in Chicago because the man who earns three times the brakeman's salary must live somewhere between Chicago and Detroit to be the brakeman's nearest neighbor.
2. The brakeman is Jones because he has the same name as the passenger living in Chicago.
3. Robinson is the fireman because Smith beat the fireman at billiards.
4. Smith is the engineer.

I could be wrong, though.

Anthony C. Manfre
Richmond Hill, N. Y.

Have faith in yourself, Mr. Manfre, you're not wrong. And neither were the majority of readers who also chose Mr. Smith as the engineer.

Uncle Tom's Critics

In your October Dear Editor you published a drawing of Tom McCahill which I sent to you as well as a note. Thanks for printing them. But I have encountered some disagreement due to the adjectives with which I expressed my opinion.

I now realize that I have outstepped the bounds and I wish to apologize to Mr. McCahill for the disrespect I showed him by the use of such sassy language.

My opinion of his overzealousness toward foreign sports cars remains the same but the opinion should have been expressed more politely.

Al Merino, Jr.,
South Gate, Calif.

Uncle Tom says forget it, Al. He appreciates your wish to apologize but doesn't really think it's necessary. After all, we ask only that our readers keep their comments short, interesting and clean. And straightforward, pungent criticism never hurt anybody. Especially Tom McCahill, whose mailbox is usually jammed with bouquets.

[*Continued on page* 33]

Yours for the asking— No charge—no obligation

"How to Become a Mail Order Millionaire"

Read how Gilbert on a "peanut" investment built up to $350.00 A DAY. Learn how Zimmerman started a mail order business on a buck private's pay and spiraled $16.80 into a big yearly income. See how a Chicago clerk quit a $75.00 job and now makes $22,000 a year in his own Mail Order business. Read how a southern boy made a fortune selling war-surplus parachutes which he bought as he went along. All Free! Send name on coupon for a copy of this fascinating reprint of "How to Become a Mail Order Millionaire" from Mechanix Illustrated plus details on the L.W. Mail Order Survey.

Start on a SHOESTRING!

The real-life stories of success in Mail Order read like fairy tales. If I had not personally known these people their stories would be hard to believe. Yet they are not only true, but they represent just a few of the hundreds of "little operators" who have been swept into big money by Mail Order.

GAINES. I personally guided his start when he invented an automatic pants presser. He started with one little ad in one magazine. Four years later he retired — with enough real estate to keep him in cash income the rest of his life.

VAN MARK. I worked with him for six years. I met him when he was a wagon man for a tea and coffee house, knocking on doors. He went into Mail Order on nothing—made money from the start —ended up six years later with savings of $50,000 and an income of $5000.00 a year for life without further work.

DUGGAN. A few years ago he was a truck driver. Started fooling with Mail Order in a spare room in his spare time. Last year he said, "I don't know how much I'm worth—after you get the first million you quit keeping track."

MRS. NIXON. Started a small Mail Order business at home—just to keep occupied. It looked good and she came to me for advice. I showed her how to expand. In two years the business got so big her husband resigned his job to help manage it.

FOXMAN. Foxman worked as a hack writer at $70 a week. He had idle time in the evenings—ran an ad offering something he didn't have—got so many orders he had to find a source of supply. He made $18,000 the first year. He gives me credit for "showing the way."

JORGENSON. Consulted me about a specialty product. On my advice he ran one ad to "test" its saleability. That ad brought sales of $50,000. In his first year he did a business of nearly a half million dollars. His original investment was less than a thousand.

These things I have seen. These people I have helped to the realization of their dreams — these and hundreds of others. My own fortune was made in Mail Order. And now my secrets can be yours.

L. W.

Have you ever thought of running a profitable little sideline right from your home? Has it occurred to you that *you are just as capable as anyone else* of making money on a product or service that can be sold by mail? Have you ever looked into the Mail Order business as it's run (on tiny investments) by innumerable small operators?

Forget about Sears and Ward's! *Read about the "little fellows"* . . . clerks, teachers, vets, mechanics, salesmen and others . . . who are packing Mail Order items in bedrooms, spare rooms, attics, garages, cellars . . . dumping them in the Post Office . . . and quietly banking the fistful of Money Orders, cash and checks delivered to them daily by the mailman.

An annual business of almost a billion dollars is done by "little fellows" who advertise and sell *just one item!* The Department of Commerce of the United States says, "A number of the most successful obtain incomes as high as $40,000 to $50,000.00."

It's an incredible story . . . a story of a business that's wide-open for newcomers . . . with opportunities for income far-and-away greater than you can ordinarily hope to attain by holding down a job. And in Mail Order you can stay as small as you wish—run your deal as a $50 or $75 weekly sideline—or consider jacking it up into really big figures as a full time operation.

Glance at the examples at left. *These true stories are far from unusual.* Multiply them by the hundreds and you begin to get an idea of what can be done . . . what *is* being done . . . in the phenomenal Mail Order field.

* * *

Yet, if you were to jump blindly into Mail Order your chances would be slim. A peculiar brand of "know-how" is vital in this little - known, little - understood business. *This is fortunate for you.* If any Tom, Dick, or Harry would "click" in Mail Order, the field would have been overloaded years ago.

But now you have the opportunity to learn the authentic secrets of successful Mail Order operation. They are revealed for the first time, step by step, in an extraordinary new Survey . . . *the L.W. Confidential Mail Order Letters.*

This Survey is not a course—not a book —not a group of lessons. It is a simple guide that anyone can follow. It shows you how to pick the right product for Mail Order. It shows you exactly how to start a profitable business *fast*, with cash or Money Orders in the envelopes you receive. It shows how to buy your product out of the very money you get in the mail, so you don't have to tie up cash in large supplies of your product. It gives you actual examples of ads and letters, *analyzed to show how and why they make money.* It demonstrates the months to start, the time to expand, the best way to get prospects' names. It reveals from A to Z the confidential facts that have made fortunes for Mail Order operators who use them.

Mail the coupon today, or simply send your name and address on a postcard. No salesman will call. We will mail, postage prepaid, a *Free* copy of "How to Become a Mail Order Millionaire" and along with it will give you complete facts about the L.W. Mail Order Survey. Read the facts. Then decide whether you would like to spend spare time or full time in a profitable, fascinating Mail Order enterprise. If you think you would like to follow the footsteps of hundreds of others who are now making good money in this way, you can get your L.W. Survey and begin at once.

Please don't decide to write us "a little later." Send your name *now*, before you forget. This one little act might be the first step to a future of independence and wealth.

The L. W. MAIL ORDER SURVEY, Dept. 41
7070 N. CLARK ST., CHICAGO 26, ILL.

The L. W. MAIL ORDER SURVEY, Dept. 41
7070 N. CLARK ST., CHICAGO 26, ILL.

Mail me a free copy of "How to Become a Mail Order Millionaire" and details about the L. W. SURVEY. It is understood there is no charge at any time, and that I am not under the slightest obligation. After reading, I will decide whether I want to use the L. W. Confidential Letters to help me start a Mail Order business at home.

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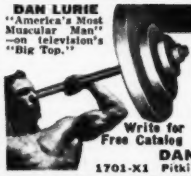

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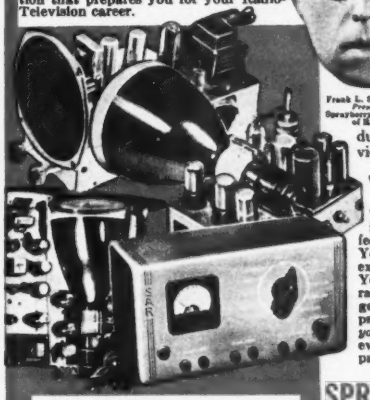

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You can get into Radio-Television, today's fastest growing big money opportunity field, in *months* instead of years! My completely new "package unit" training plan prepares you in as little as 10 months or even less! *No monthly payment contract to sign—thus NO RISK to you!* This is America's finest, most complete, practical training—gets you ready to handle any practical job in the booming Radio-Television industry. Start your own profitable Radio-Television shop . . . or accept a good paying job. I have trained hundreds of successful Radio-Television technicians during the past 21 years—and stand ready to train you, even if you have no previous experience! Mail coupon and get all the facts—FREE!

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The new Sprayberry "package" plan includes many big kits of genuine, professional Radio-Television equipment. You perform over 300 demonstrations, experiments and construction projects. You build a powerful 6-tube 2-band radio set, multi-range test meter, signal generator, signal tracer, many other projects. All equipment and lessons are *yours to keep* . . . you have practically everything you need to set up your own profitable Radio-Television service shop.

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All your 10 months of training is IN YOUR HOME in spare hours. Keep on with your present job and income while learning. With each training "package" unit, you receive extra plans and "Business Builder" ideas for spare time Radio-Television jobs. New television stations everywhere, open vast new opportunities for trained Radio-Television Technicians—and those in training. If you expect to be in the armed forces later, there is no better preparation than practical Sprayberry Radio-Television training.

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Dear Editor—

[*Continued from page* 28]

Topsy Car—It Just Grew

This snap will give you an idea of the dream I had. Started in August 1950, it's reached the point now where I can test it a bit, then go back and add a little more.

I have no plans for this little car—it grew up piece by piece from the '37 Plymouth frame that I shortened 20 inches. As it stands now, it has a 92-inch wheelbase, is 36 inches high, 113 inches long and 69 inches wide.

Light steel frame for the body is welded to the car frame. The body was built up as the old Weyman bodies were built, except that I have three layers of Fiberglas cloth as the outside covering.

Harry C. Greene
San Bernadino, Calif.

Carb Correction

We were interested in your good article on carburetors in the December issue of MI (The Carburetor, page 134). However, no mention is made of the fact that Carter four-barrel carburetors are also original equipment on Buick, Cadillac and Oldsmobile cars, sharing this business with Stromberg on Buick and Rochester on the Cadillac and Oldsmobile.

Dudley A. Bragdon
Carter Carburetor Corp.
St. Louis, Mo.

[*Continued on page* 39]

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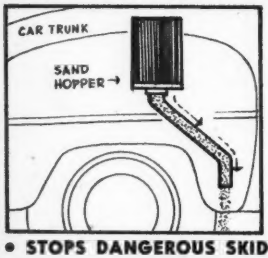

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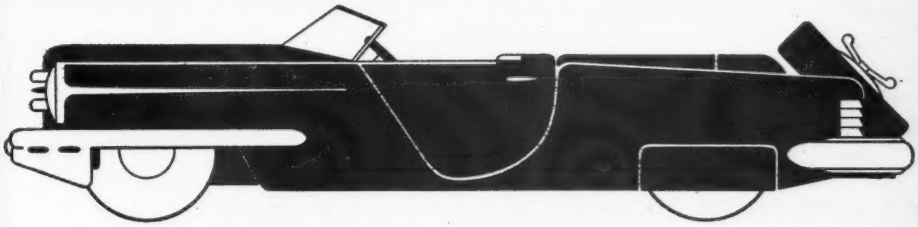

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(PLEASE PRINT)

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1911 MAXWELL
Length 7½" Kit $2.50

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1st Step—CLEANSE WITH "MOTOR PURGE"—In the FIRST step of the famous Motor Renew Kit treatment, the "Purge" formula cleans, quiets and frees rings, valves and pistons from efficiency and power robbing carbon, gums and varnish. Pour this miracle solvent into the cylinders, run your motor and watch the combustion residue billow out of your exhaust pipe.

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Send $5 deposit, pay postman balance plus postage. Please state whether wheel on your machine turns toward you or away from you. Shipping wt. 6 lbs. Order carrying case to fit your machine at new low price—$9.50 plus postage. State the type machine you have. We also sell sewing machines.

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AT HOME . . . SPARE TIME HOBBY-BUSINESS

Learn every Oriental Secret of growing Redwoods, Cypress, Fruit Trees (that bear and blossom), Oak, Evergreen — EVERY KIND . . . perfect miniature specimens . . . cost you pennies. New method takes less than 25 days. Space here does not permit tell-ing you all the great opportunities in this new field.

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EVERYTHING ONLY $2.00 FULL PRICE

(Absolutely No Other Payments)

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If you don't agree that it costs 3 to 5 times as much to buy elsewhere, that everything is worth at least 5 times the cost, or if you're not satisfied in any way.

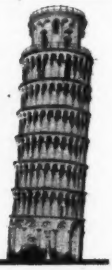
HERE'S WHAT YOU RECEIVE:

1. 25 PART COURSE. Step-by-step—filled with illustrations, photographs, latest methods, complete business plan, etc., etc. Tells HOW TO select. dwarf, plant, shape, decorate, publicize, market. sell, mail order, price, exhibit, etc., etc. (Guaranteed the LARGEST, MOST COMPLETE COURSE EVER WRITTEN and ever offered by anyone — written by foremost experts.)
2. Extra large PLANTINGS OF 8 OR MORE varieties of finest seeds, such as, Imported Cypress, Chinese Elm, California Redwood, Japanese Evergreen, Cherry, Flowering Apple, Maple, Swiss Pine; plus Orange, Lemon, Pomegranate, etc., etc. All tested and absolutely guaranteed perfect.
3. Generous supply of Miracle Formula for extra rapid growth—cuts growing time in half.
4. New technique instructions HOW TO RAISE A LIVING MINIATURE TREE *IN 1 DAY.* Astounding . . . but true! This sensational short-cut method is fully illustrated and easy to follow — guaranteed to work. You'll be amazed.
5. Big supply TREE MARKERS (make growing easier.)

WHY PAY MORE?—Everything you need AND MORE! MORE than offered by others for 3 TIMES THE PRICE

LIVING MING TREES
Dept. T1, Box 2127, Inglewood 4, Calif.

It CAN be done- but don't try it!



Sometimes it's possible to break all the rules—and get away with it. But for the most of us, most of the time, the rules hold. That is particularly true when it comes to saving money.

Those of us on a payroll are eligible to use the wonderful Payroll Savings Plan. The rest of us can use the equally wonderful Bond-A-Month Plan through our local bank. Use whichever is best for you. But—use one of them!

AUTOMATIC SAVING IS SURE SAVING

. . U. S. DEFENSE BONDS . .

To Men Who Are "IN A RUT"

Bored with your job? Not getting ahead *fast* enough? Get into a new high-pay field! Learn at home, spare time. Choice of 391 I.C.S. courses. Only few cents a day. Engineering, Television, Business, Aviation, Drafting, Automotive, etc.

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Dear Editor—

[*Continued from page* 33]

New MI Mystery

A missionary about to be executed by rather intellectual savages was given a choice of the manner of his execution. He was told he might make any statement he desired: if it were adjudged true, he would be shot with a poisoned arrow; if it were adjudged false, he would be burned alive.

The missionary, who was also rather intellectual, came up with a statement which caused a quandary among the savages and thus obliged them to set him free.

What did he say?

Marcus J. Ferrule
Ithaca, N. Y.

If I Had the Wings Dept.

Being an experienced cabinet maker, I suggest Bill Holup who asked how to be sure a square is square in your November Dear Editor column, lay one edge of said square along one edge of a straight side table or workbench. Then, scribe a line along the perpendicular edge of the square and turn the arm that is along the straight edge over and see if the line is still parallel to the edge of the square.

Carl E. Hermann, Jr.
No. 66289
Jackson, Mich.

P. S. All the fellows here at the world's largest walled prison enjoy your fine publication, especially the articles on ladder-building and flying.

Always glad to have another pen pal.

"This is fun, I tell you, this is fun, this is fun!"

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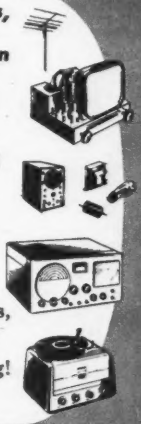

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OVER 11,000 people died in fires last year. An eager public has been waiting for a practical *new* kind of fire extinguisher. Now it's *here*! Tiny "Presto" does the job of bulky extinguishers that cost 4 times as much and are 8 times as heavy. Ends fires fast as 2 seconds. Fits in palm of hand. Never corrodes. *Guaranteed 20 years!* Sells for only $3.98! Over a million already sold!

You can make good money showing this new discovery to civil defense workers, owners of homes, cars, boats, farms, etc., and to stores for re-sale. Stanley Hyman reports making over $1000 a month. H. J. Kerr, $20 a day. William Wydallis, $15.20 an hour.

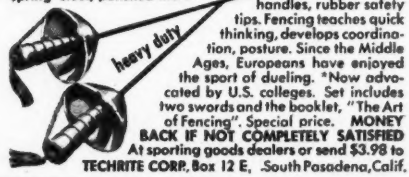
Science's New Midget Miracle "PRESTO"

What's the secret of "Presto's" amazing power? It's a new war-born wonder chemical found to be 1.5 to 6 times as effective as chemical contents of other extinguishers on an equal weight basis. Makes possible, for the *first time*, an extinguisher that is *small, light,* and *amazingly effective*. Help supply the demand for this important new discovery. Write for FREE Sales Kit. No obligation; no capital required. But don't put it off. Every day you hesitate may cost you $10, $15, or even $50 you *could* be making. Send postcard or letter to: **MERLITE INDUSTRIES, Inc., Dept. 101, 201 East 16th St., New York 3, N. Y.** IN CANADA: *Mopa Co., Ltd., 371 Dowd St., Montreal 1, P.Q.* ***(If you want a regular Presto to use as a demonstrator too, send $2.50. Money back if you wish. Returnable for FREE refills.)***

French STYLE DUELING SWORDS

SET OF TWO $3.98 post paid

Once used in deadly combat—now an exciting sport! Learn right at home. Fun—safe*—educational. These swords are made of fine blue spring steel, polished metal



guards, turned handles, rubber safety tips. Fencing teaches quick thinking, develops coordination, posture. Since the Middle Ages, Europeans have enjoyed the sport of dueling. *Now advocated by U.S. colleges. Set includes two swords and the booklet, "The Art of Fencing". Special price. MONEY BACK IF NOT COMPLETELY SATISFIED

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BACHELOR OF SCIENCE DEGREE IN 27 MONTHS in Mech., Civil, Elect., Chem., Aero, Radio (Telev.) Engineering; Bus. Adm., Acct. Extensive campus, well equipped buildings and labs. Low cost. Prep. courses. Personalized instruction. Big demand for graduates. Serious shortage of engineers. Prepare now for the opportunities ahead. Founded 1884. World wide enrollment. Approved for Korean vets. Enter Jan., March, June, Sept. Write for Catalog.

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Guided Missile Filter CAN NOW BE USED IN YOUR CAR!

NEW PERMANENT CARTRIDGE **OIL FILTER** CAN SAVE MOTORISTS $200 MILLION PER YEAR!

STOP WASTING MONEY!

This Filter Eliminates

✓ CARTRIDGE REPLACEMENT ✓ OIL LOSS
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Famous "Filterall" filters 100% of your oil through a permanent bronze cone cartridge which never wears out. This new porous metal oil filter pays for itself by saving the cost of stock oil filter cartridge replacements. It filters out dirt particles as small as 39 millionths of an inch but does not soak up valuable protective oil additives. No oil is lost or by-passed, regardless of temperature. To clean, just rinse the bronze cartridge in gasoline. Fits all cars and light trucks.

(Specify make and model of car and present filter.)

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Complete Heavy Duty Filter Assembly. $12.95 ppd.

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STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF

MECHANIX ILLUSTRATED published monthly at Greenwich, Conn., for October 1, 1952.

1. The names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Fawcett Publications, Inc., Greenwich, Conn.; Editor, William Parker, Larchmont, N. Y.; Managing Editor, Ralph Daigh, Pelham Manor, N. Y.; Business Manager, Gordon Fawcett, Greenwich, Conn.

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

GORDON FAWCETT,
Business Manager

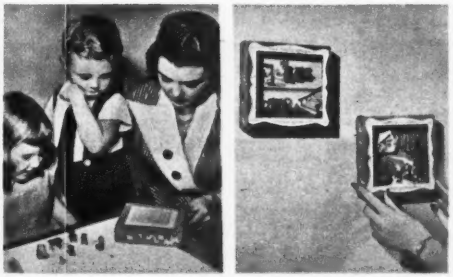
Sworn to and subscribed before me this 15th day of September, 1952.
[SEAL] LILLIAN M. BUSHLEY
(My commission expires April 1, 1953.)

MIscellany

Flash Defrosting

Automatic defrosting, butter conditioner and colored interiors are offered in new Admiral refrigerator. Homemaker can press button and defrost in ten minutes. Button activates heat element under coils, melts frost.

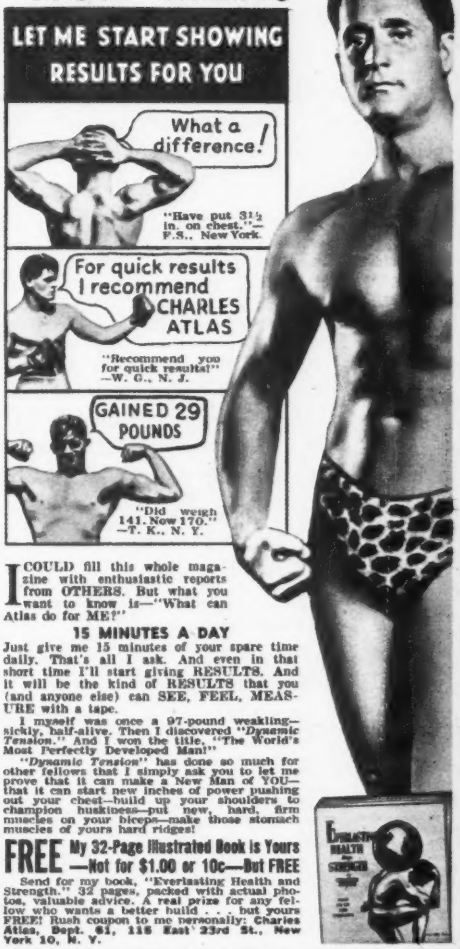
Living Fairy Tales



When telling a tale to a child, illustrate it with these three-dimensional characters. Back of box contains the entire story in which they appear. They are made of Bakelite styrene; the box measures 6 by 6½" and can be hung on wall. Emenee Industries, Inc., 200 Fifth Avenue, New York City 10, New York.

[*Continued on page 43*]

Will You Let Me PROVE I Can Make YOU a *New Man?*



I COULD fill this whole magazine with enthusiastic reports from OTHERS. But what you want to know is—"What can Atlas do for ME?"

15 MINUTES A DAY

Just give me 15 minutes of your spare time daily. That's all I ask. And even in that short time I'll start giving RESULTS. And it will be the kind of RESULTS that you (and anyone else) can SEE, FEEL, MEASURE with a tape.

I myself was once a 97-pound weakling—sickly, half-alive. Then I discovered "*Dynamic Tension*." And I won the title, "The World's Most Perfectly Developed Man!"

"*Dynamic Tension*" has done so much for other fellows that I simply ask you to let me prove that it can make a New Man of YOU—that it can start new inches of power pushing out your chest—build up your shoulders to champion husktiness—put new, hard, firm muscles on your biceps—make those stomach muscles of yours hard ridges!

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FULL COLOR! 12 for $1

Each about 4 inches long, just the right size for hundreds of uses. Original designs by foremost artist of antique automobiles, Clarence P. Hornung. Rich in authentic detail, gay, colorful with the bright glaze of old coachwork. Includes early favorites —1898 Packard, 1908 Maxwell, 1902 Rambler, 1908 Model T, 1908 Buick, 1903 Olds and a half dozen others, all in brilliant colors. Use on ash trays, plaques, coasters, lamp bases, serving trays, mirrors, walls, furniture, toys, bars, glasses, frame as pictures, etc. Washable. Easy to transfer. Mailed to you postpaid with simple instructions. No C.O.D.'s.

Send $1 to AUTHENTICS, Dept. P • Box 26 Cincinnati 7, Ohio

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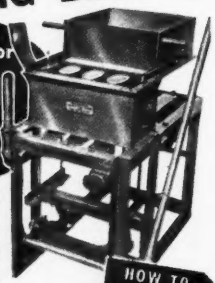
Earn BIG MONEY MAKING BUILDING BLOCKS

General Concrete Vibrator
BLOCK MACHINE
CAPACITY 1000 BLOCKS A DAY
Only $218 LESS MOTOR F.O.B. PLANT
SHIPPING WEIGHT 400 LBS.



Here is a business you can start on small capital—in your own backyard—that earns 100 to 150% profit, with unlimited opportunities. Make concrete or cinder blocks. Millions used for homes, factories, public buildings, garages. Sell all you make to building trade. Do it with a General—and you're headed for success.

1000 BLOCKS A DAY

The General is a high speed, power-driven block machine at amazingly low cost. Rugged all-steel construction. Simple to operate indoors or outdoors. Makes superior 3 core type block meeting all code requirements. Produces up to 1000 blocks per day. Full operating instructions and mixing formulas supplied. Write for FREE details.
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Includes floor plans for 6 beautiful, easy to build concrete block bungalows. Shows ways to save money. How to lay blocks, lay out building lines, mix concrete, build steps, porches and concrete floors. Mail coupon at once with $1.

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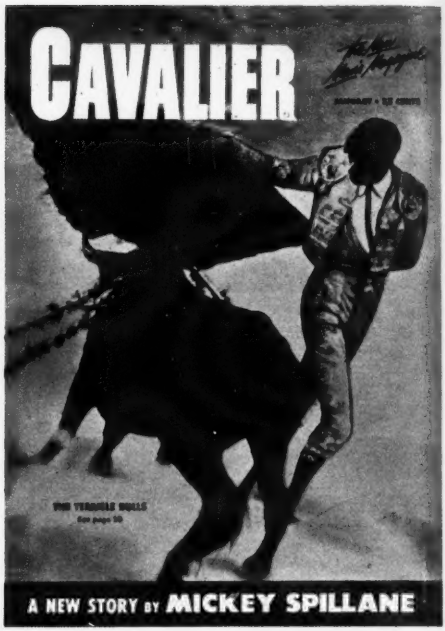

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ARE YOU GETTING THE MOST OUT OF SEX?
I TAMED THE WORLD'S WORST RIVER
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THE TERRIBLE BULLS
MATA HARI OF THE MARINES
CAMERAMAN'S HEAVEN

At all newsstands now Get it today! 25c

A FAWCETT PUBLICATION

MIscellany

continued from page 41

Modern Wood Burner

Employing principle of destructive distillation (wood placed at top of burner where it falls to combustion zone) new burner preheats wood and needs to be filled but twice a day. Woodomat has automatically controlled damper and does away with unfavorable gases. Pantex Manuf. Corp., Pawtucket, Rhode Island.

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The ContouRest chair is constructed to withstand hard usage and will not be harmed by exposure to all kinds of weather. It is finished in deck white or redwood, and is ideal for patios, porches and gardens. It can be adjusted for reclining positions. Glenway Products, Van Nuys, California, makes this new chair.

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are designed to the specifications of the engineers who designed your car. Fram gets oil cleaner, faster, and keeps it clean longer than any other make. Only Fram is unconditionally guaranteed. Insist on Fram next time you change your cartridge.

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SELLY OF CALIFORNIA started in his SPARE TIME and now sells 1,500 D-FROST-O-MATICS a month!

Just say "Never defrost your refrigerator"—four magic words that can pay you BIG MONEY . . . spare or full time! Show housewives how amazing **D-Frost-O-Matic** *ends* forever the messy, sloppy, time-wasting task of defrosting by hand! **D-Frost-O-Matic** makes any electric refrigerator **automatically self-defrosting!** And talk about easy sales! Just plug in **D-Frost-O-Matic** and leave a few days. When housewife sees how **D-Frost-O-Matic** saves time, work, food, and money—she won't let you take it out! That's why 9 out of ten **FREE TRIAL** installations are almost certain sales with big cash profit to you! Many D-FROST-O-MATIC men sell 5, 7, 10 and more units IN A DAY on this sure-fire **Free Trial Plan!**

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Invention Clinic

[*Continued from page 24*]

tain in operation, especially when a large quantity of gas is needed for proper combustion. Even a simple Kipp generator is out of the question because of the size needed.

For the inventor who feels like working along different lines there is the possibility of utilizing electric heat and an air jet, or heat obtained chemically, for example by alcohol and spongy platinum or acetone and copper.

Although all of these suggestions are offered as possibilities, it should not be assumed that there is any direct path to speedy success. Try to keep in mind the sort of tool you would like to have. Preferably the torch should contain its own fuel which must be easily obtainable and inexpensively replenishable. The flame should be under perfect and speedy control. If air is to be added it should be smoothly available and automatically produced in quantities sufficient for proper operation. Avoid any attempt to work with pre-pressurized fuel containers. There are many torches which use them on the market today. •

Next month: Paint Removers

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650-15	4.66	710-15	4.76	750-20	12.76	1000-20	18.96
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600-16(6)	5.76	640-15	5.66	750-16(6)	9.76	750-20(8)	13.96
650-16	5.76	670-15	5.66	700-17	10.76	750-20(10)	15.06
650-16(6)	6.96	710-15	6.46	750-17	11.66	825-20	18.96
700-16	6.76	760-15	6.56	750-15	13.56	900-20	18.96
750-16(6)	8.76	800-15	7.16	825-15	10.06	1000-20	19.76
550-18	5.96	820-15	7.36	600-20	10.66	1100-20	20.96
550-17	5.46	670-16	6.66	32x6(8)	11.56	1200-20	23.76
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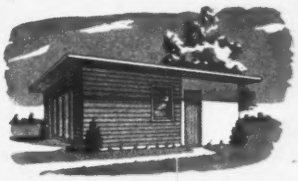

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Beat High Costs With SPARE-TIME JOBS

MI SPECIAL FEATURES

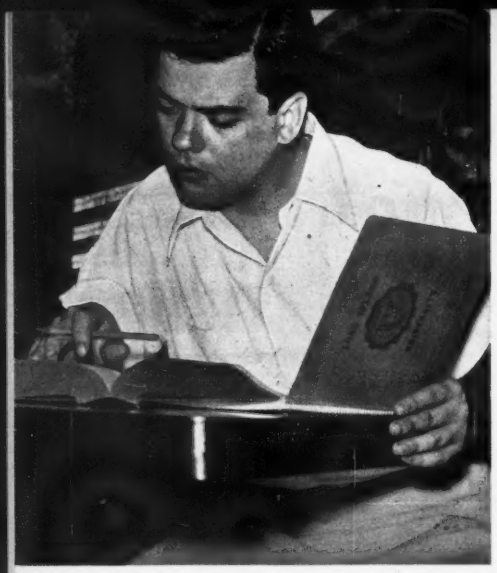
Eric Swanson, 56-year-old retired seaman of San Francisco, built this model of his old ship, Golden Gate. He found a market, sells his models for $5,000.

Short of money? There are lots of ways you can increase your income with your hobby or a job on the side.

By Harry Kursh

A FEW years ago, Ed Robinson worked in an advertising agency in New York. His wife, Carolyn, had a department store job. Both were reasonably content. But just for kicks they bought themselves an inexpensive homestead near Norwalk, Conn., about an hour by train to the big city, and went in for part time farming. It wasn't easy, but it was fun.

In fact, they loved it so much that they decided to write a booklet which they called The Have-More Plan, all about how part-time farming succeeded in giving them a richer, fuller life. The booklet went over with a smash. Their mail was flooded with orders from all over the country and even from such far-off places as India.



Jim Rodgers is a busy man. He's a student at Long Island University, President of the Student Council, studies when he can while working in a luncheonette, above left. He poses with his family, above.

It was only the beginning. They began writing and selling more booklets. Before long they found themselves in a full-time booklet business and the self-appointed leaders in a crusade to get more people interested in part-time farming. Ed and Carolyn left their jobs and opened The Country Book Store in Noroton, Conn. According to the latest figures, more than half a million of Ed Robinson's original plan booklets have been sold at $1 per.

Ed and Carolyn are not alone. Many astonishing success stories originating in part-time occupations are being quietly written all over the country.

Last year, Marianne Roney, a 22-year-old Phi Beta Kappa, was working for her Ph.D. in medieval literature at Columbia University in New York. Meanwhile, Marianne took a part-time job writing phonograph record album notes for Bartok Records, Inc. The job gave Marianne an unique idea. Why not combine literature with the phonograph? She got hold of another 22-year-old Phi Beta Kappa, Barbara Cohen, and together they organized Caedmon Record Co. for the purpose of selling discs featuring the works of famous present-day novelists, poets and playwrights. That was only a few months ago.

They didn't even have an office. Yet they managed, through initiative and enthusiasm, to get such celebrated names as Tennessee Williams, Thomas Mann and Laurence Olivier to read from their own works for recordings. The New York Times described the first four releases of Caedmon records as direct hits. The orders are still pouring in from nearly every state in the Union.

Now Marianne and Barbara operate their own studio in New York's swank office district at 460 Fourth Avenue and they have national distribution for their products. "We're well on the road to real success," says Marianne.

In this generation, the idea of working on a part-time job has spread like a brush fire. Today, according to the latest report of the government's Bureau of Census, close to 10,000,000 men and women are engaged in part-time occupations.

Mrs. Alice Daly of San Francisco sells unusual Christmas cards. She makes figures, scenes from scrap materials, photographs them in color.

But he has a full-time job, too, as an elevator operator. He plans to become a social worker.

It goes without saying that untold millions are using their spare time to meet soaring living costs and to augment the family income, maybe to pay for a new car or television set. When a New Jersey reporter recently found a college professor working nights as a part-time counterman, the story landed on page one. When a Long Island high school principal was killed in an accident while driving a truck on the final day of his part-time summer job last year, that tragedy made page one, too.

But overlooked by headlines is the simple fact that many are using part-time jobs to aim for new fortunes. The census survey, for instance, showed that at least 7,900,000 of the 10,000,000 part-time workers in the country were on such jobs for more reasons than economic need.

Just before World War II, Richard S. Perkin was a Wall Street broker. An associate of his, Charles W. Elmer, was a court stenographer. But between them they had a lot in common. They were keenly interested in amateur astronomy. For such a precise hobby there are many problems.

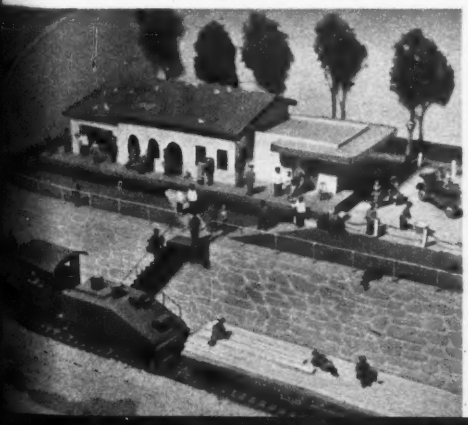
Perkin and Elmer decided their fellow hobbyists could use a little help with optical equipment. They started a small, part-time shop. Today, Perkin-Elmer Corp. with more than 350 employes is one of the leading firms of its kind in the nation. Still growing, it has mushroomed out into the commercial instrument field in which they are the largest producers of infra-red spectrometers, instruments designed to analyze complex chemical substances. A Perkin-Elmer panoramic camera recently gained world-wide fame for its ability to photograph the entire State of Pennsylvania in less than a day. Elmer retired three years ago. Perkin, now 46, is president of the company.

Of course, most people don't get rich overnight as the result of a part-time job. Nevertheless, if you have any kind of spare time, take a good look around you. It might be a forgotten hobby or some way in which you solved a problem with your own hands or brains that could turn out to be your own way of beating the high cost of living.

Take the case of Mrs. Louise Cohen of Cheviot Hill, Calif. She was giving a party in her house not long ago and wanted special match boxes in keeping with the tone of her party decorations. She scoured every store but was unable to find anything she liked.

Finally she made her own by covering

Charles Weston of Healdsburg, Calif., creates tiny people for miniature HO-gauge railroad layouts. They are perfectly balanced, made to a scale of 3½ mm to a foot, and complete in every detail even to the gold stripes on uniforms of conductors, brakemen. There are 40 models, hand painted.



ordinary match box covers with colorful wallpaper. It delighted her friends. So, Mrs. Cohen sat down to make more. It soon became a hobby. Last year, she started selling them. She's already sold more than 15,000 of them through some of the nation's top-rate department stores in Chicago, New York, Los Angeles, Pittsburgh and Boston.

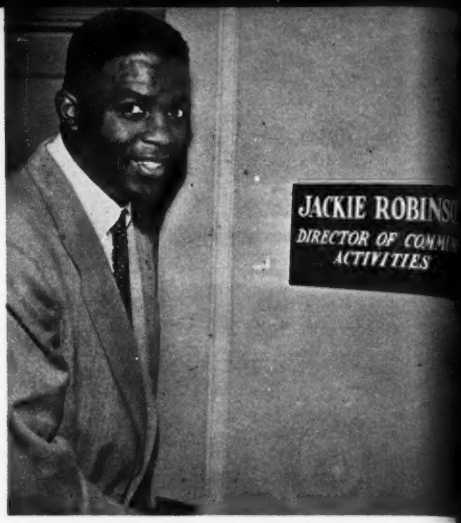
In Baldwin, Mich., R. W. Overholser was making furniture out of weirdly shaped tree roots in his spare time. He found that it attracted much interest. He collected his products under one roof and now puts on an exhibit which he calls Shrine of the Pines. He pockets extra cash by charging an admission fee.

A few years ago, Mrs. G. B. Warren was surprised on her birthday with the gift of a tiny, table-model kiln. She tried her hand at making small ceramic objects for family, friends and neighbors. A lot of women wanted to know how she did it. In a little while, Mrs. Warren found herself teaching her hobby to a small group of women. In the basement of her Springfield, Ill., home Mrs. Warren is now in business, running year-round classes for women eager to learn a new hobby or to make artistic objects for their own homes. She already has had over 400 students.

The case of Robert H. Swackhamer in Long Valley, N. J., was a little different. He wasn't too pleased with his job as an aircraft company sales manager. It kept him away from his family too often. One day, two years ago, while watching his wife painstakingly braiding a rug, he decided that a small, home-type machine ought to do it faster.

Robert, the handy type, set to work designing such a machine. He even got a patent on it. Now in a rented two-story structure not far from home, Mr. and Mrs. Swackhamer tend to a thriving business in braided rugs. You can find Robert home most of the time these days.

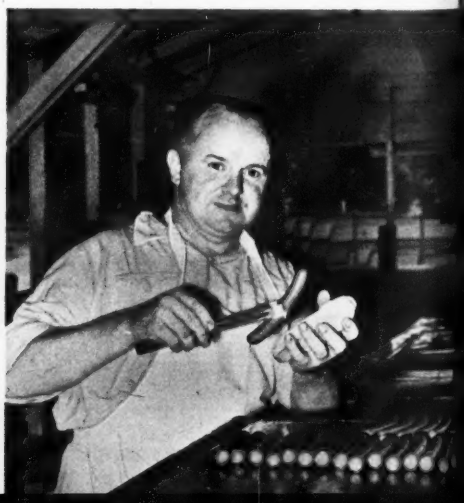
Maybe the neighbors of Dallas Smith in his home town of Indianapolis thought it was odd for a man who was an Indiana State Police aviator to be cutting up pieces of fiberboard in his spare time. Yet that's what Smith was doing about three years ago when he toyed with the idea of making easy-to-move living room chairs for muscle-sore housewives. The idea came



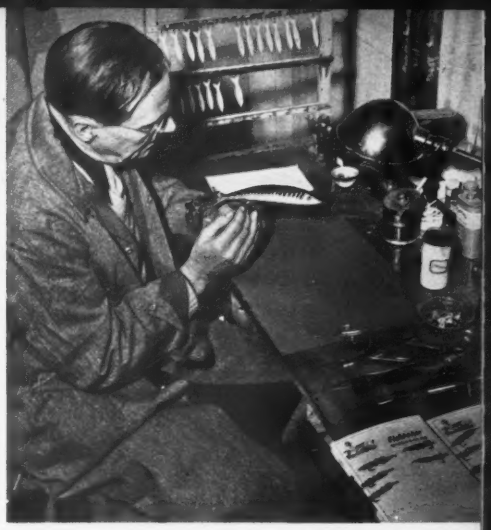
Brooklyn Dodgers' Jackie Robinson has an office at Rockefeller Plaza, New York, after signing NBC contract as Community Activities Director.

Several years ago Jesse Newman of Nags Head, N. C., started collecting sea shells as a hobby. Now he supplies collectors all over the world.

Detroit High School Principal Clinton Galbraith made only $3,175 yearly, earned extra money by working 14 hours daily in summer hot dog stand.



Abe Patterson of Pembroke, Ontario, was a lumberman till he found he could whittle. Now he's so far behind in orders he never will catch up.



In Saco, Maine, lives Perc Sylvester, retired rubber worker. He made a fishing lure, it worked, now he sells thousands of all kinds yearly.

when he visited friends in a new home and had to sit around on fragile crates because their furniture hadn't yet arrived. He succeeded in making his unique fiberboard chairs so strong that they hardly could be distinguished from the real thing, once disguised under slip covers. Naturally, he's no longer a pilot cop. He's too busy shipping his chairs all over the country at $20 and $30 each, depending on style.

Experts in the field of vocational guidance agree that one of the most vital and most overlooked factors in spare-time occupations is the opportunity it provides to get new ideas. In their language, it's called vocational exploration.

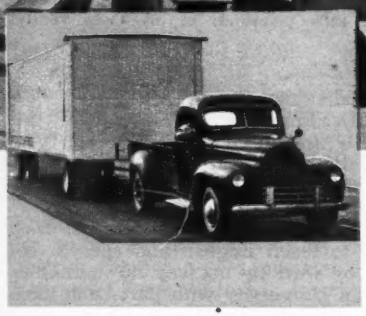
Says Dr. Emily T. Burr, director of the nationally known Guidance Bureau, Inc.: "The value of human relations and the broadening of your experiences come out amazingly well through part-time work."

Lawrence A. Appley, for instance, once wanted to teach English and speech. He started by working his way through Ohio Wesleyan University with part-time jobs. Subsequently, he was a washing-machine salesman, a short-order cook, a motorcycle cop, a truck driver, a high school debate coach and a streetcar conductor.

On the surface these jobs had nothing in common, but they gave young Appley a keen interest in people and in the subject of human relations. He scrapped his teaching plans and aimed for a new career in personnel relations. Eventually he became vice president in charge of personnel for Vick Chemical Company and the giant Montgomery Ward Company. He was appointed deputy Chairman of the War Manpower Commission. Today, he is president and chief executive of the influential American Management Association, one of the nation's top business firms.

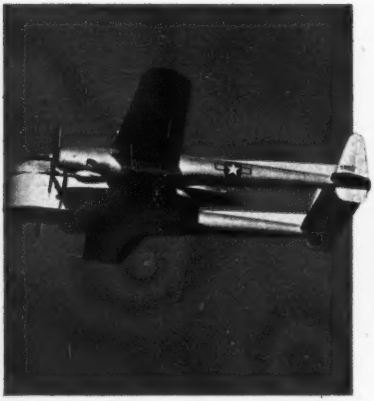
Joseph Gilman wanted to be an accountant, but when his small gift-shop business didn't pan out, he took a part-time job as a process server, handing out court summonses for lawyers. He got a fee for each one he managed to deliver. "I made $20 the first day on the job," Gilman recalls, "and it was such a fabulous sum for those times that I decided to look further into the matter." [*Continued on page* 154]

Lawrence Appley, see text, President of American Management Association, displays the 1952 Human Relations Award recently given to him.



NEW in SCIENCE

Sky Trailer by Fairchild, see advance story in July '48 MI, took to the air recently. On highway it resembles ordinary trailer, above. It drops wheels, fastens beneath XC-120 Pack Plane, top. Doors in front, back, extend and fasten for streamlining.



Pocket Submarine designed by Jean Rosseau is on display at Paris Nautical Salon. Powered by two electric motors, it dives to 100 feet and remains there for three hours. Total length is 100 inches.

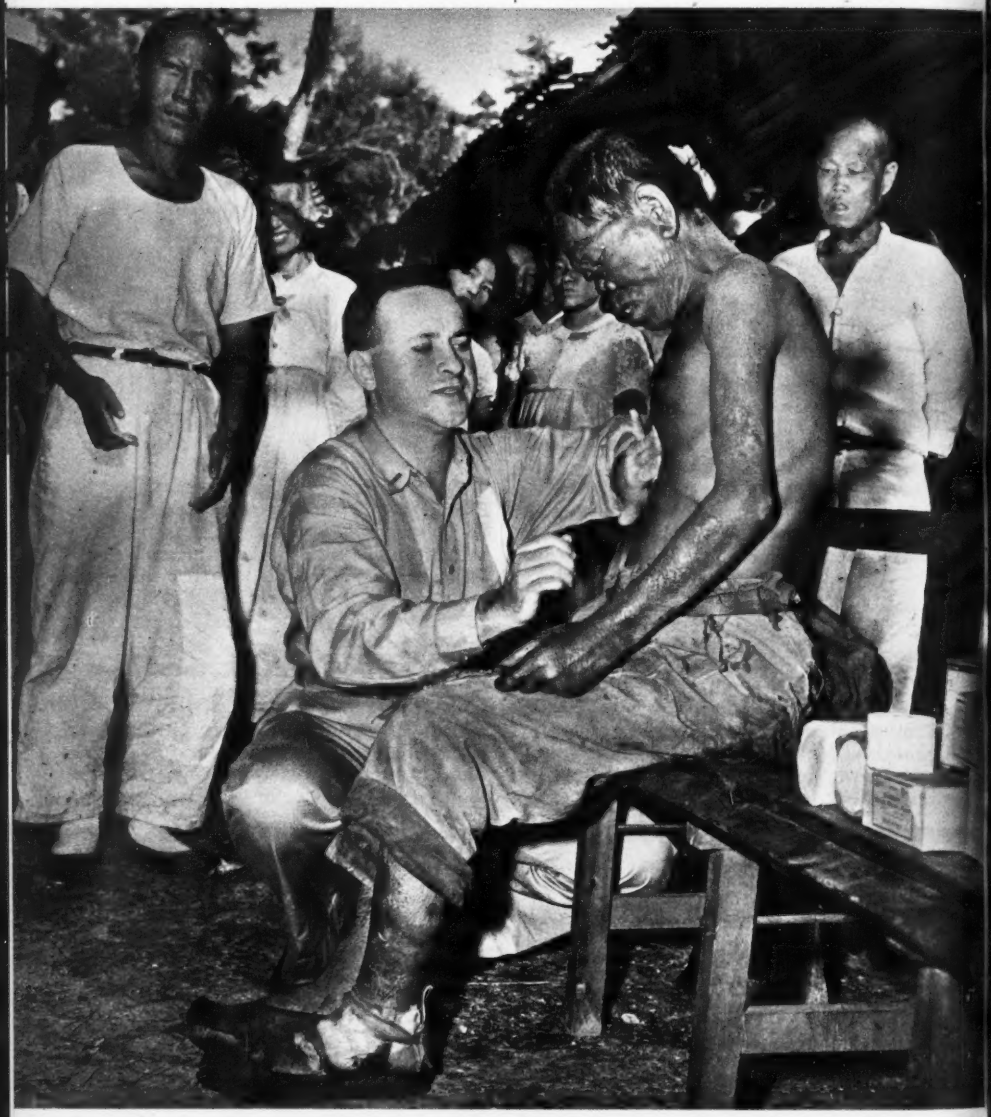
Flying Saucer Camera will be used by Air Force to clear up saucer questions. One lens takes regular picture; the other separates light into colors so scientists can judge the source and make-up of saucers.

Toy Rocket, shown at autumn fair in Frankfurt, Germany, attains speeds up to 85 miles an hour. A parachute opens to bring it safely back to earth at end of climb. When it hits market, toy will costs $5.60.

New Jet Speedboat hydrofoil went 90 miles an hour during a trial run over Britain's Lake Windermere recently. White Hawk is owned by Hanning-Lee, naval architect, who hopes to set new record.

Church Juke Box installed in Lutheran Church in Harrison, N. J., plays hymns for visitors who enter for prayer. Rev. Bornhoeft, reserve army chaplain, thought of it. Selector is remote control.

THE WORLD WAR



Leprosy, the dread disease that named its victims "untouchables" and doomed them to a living death, is no longer fatal in many cases. Here Navy doctor Lt. Luther Wilson touches and examines one of the afflicted at a leper colony on the island of Tao Do in Wonsan Harbor, North Korea. New drugs are the answer.

THAT NEVER ENDS

Smallpox claimed the lives of many in the hovels of China, top, until world efforts brought it under control. In Kamatsugawa, Japan, children are inoculated against deadly typhus, above.

Medical science battles the great plagues and diseases that beset mankind—but as soon as each is licked, another arises to keep up the fight.

By Lester David

THE greatest war in all history is being waged right now. And it's dollars to doughnuts you haven't heard of it.

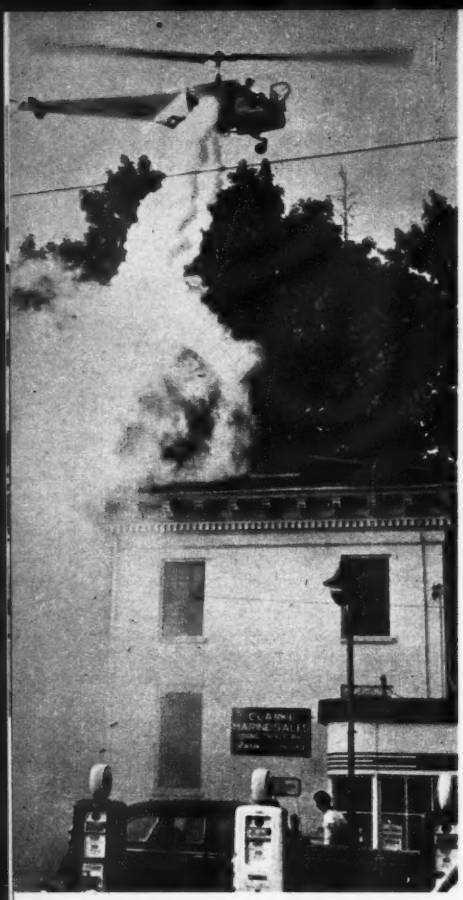
Just before this war began, this was the staggering fact. Each year malaria alone struck down 300,000,000 human beings, or one out of eight persons in the world's population. Each year the dread scourge exacted a toll of 3,000,000 lives. To get the full impact of these incredible figures, look at them this way.

All by itself, malaria killed three times as many people in *one year* as all the wars in which the U. S. has been engaged since the democracy was founded!

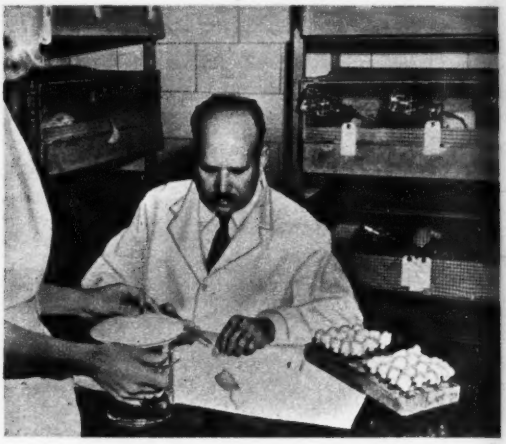
That was the situation when this mammoth global conflict was launched. Listen to the story of just one skirmish.

In Iran, malaria used to snuff out the lives of entire villages. Visitors were aghast at what they saw. Town after town had not a single child under two who was not stricken and entire adult populations would be either sick or on the verge of collapse. Whole valleys lost their crops because there weren't enough able-bodied workers to harvest them. Daily funeral processions wound from home to grave with relentless regularity.

The Iran Ministry of Public Health sent a frantic appeal to the World Health Organization, the health arm of the United Nations. A tremendous malaria control program sprang into action. The disease is caused by a parasite that is injected into the body by an infected mosquito; the answer was to kill the pests. Accordingly, spraying teams armed with DDT were mobilized and they covered the fantastic acreage of 70,000,000 square miles, pump-



The big stick in beating out many pestilences is DDT which penetrates swamps, stagnant pools and river marshes killing mosquito and fly carriers of germs. Downdraft from this helicopter's rotors forces the DDT-laden fog into nooks and crevices where it can reach and destroy germs and insects.



Polio, or infantile paralysis, the great killer and crippler, is finally succumbing to medical science. Hubbard tank, top, helps relax and restore life to shrunken muscles. Dr. Manuel Roca-Garcia, above, of Lederle Lab inoculates a mouse with new serum which appears potent, may spell death for polio.

ing the insecticide into 440,000 homes. The result? Malaria has nosedived in Iran. In some areas, the incidence has been sliced by as much as 80 per cent. The same thing happened in Yugoslavia. Before 1939, there were 200,000 cases annually. At present there are less than 7,000.

By now you must realize that this is the strangest war of all time. Led by the World Health Organization—the fabulous WHO—and aided by unaffiliated men-in-white and their heroic technicians, it is a war of mercy being waged in all the free nations of the globe. It is a war against disease.

A few years ago more than 50,000,000 persons had tuberculosis which killed more than 4,000,000 annually. There were between 20,000,000 and 100,000,000 cases of syphilis in the world, bringing death to enormous numbers. With malaria, these three diseases alone killed 20 human beings around the globe every minute of each hour in the day, week-in and week-out. Wars and atom bombs paled into insignificance by comparison.

But WHO, organized in 1948, stepped into the picture and down, down, down went the astronomic statistics of death. Armed with DDT, the wonder drug penicillin, the TB vaccine BCG, the bacilli Calmette-Guerin named for the two French scientists who developed it, WHO teams went roaming the world. They went everywhere, ferreting out disease in all corners of the globe.

In the Himalayan foothills, members of

New, rare maladies present new problems. Little Kathryn Middleton, top, suffers from one which often stops her breathing while she sleeps. Her mother must be alert and administer oxygen. Some tropical countries require by law fish, above, in drinking water to kill mosquitoes.

Influenza is a common epidemic in Europe. In Copenhagen, Denmark, a scientist tests eggs in which anti-flu serum is developed, top. Above, in Cairo, Egypt, cholera kills hundreds every week. Germs breed in piles of refuse. Cleanliness campaign, American vaccine are antidotes.

one band journeyed by elephant from village to village, crawling into thatched huts to spray DDT over everything. Object: to battle a malaria outbreak. They licked it.

In the Chana district of East Bengal, malaria was devastating the countryside. WHO teams came in, wiped it out.

Teams went aboard river boats plying the Rhine River from the North Sea to Switzerland, giving boatmen examinations and treatments for venereal disease, slicing the incidence sharply.

Everywhere they go, they bring cleanliness and health. Overall figures are not available but the big three killers are rapidly being tamed before the vigorous onslaughts. Take tuberculosis. BCG, a vaccine of living bacilli designed to prevent, not cure, the disease, has been given to millions of persons throughout the world. Recently, an eight-year-old Mexican girl became the 30,000,000th individual to get it. TB has dipped markedly.

Apart from WHO, medical science is on the march against the plagues of history and fiction, the relentless pestilences that came, killed and departed with fearsome regularity. Many, of course, still puzzle the scientists but others are being wiped off the face of the earth by medical pioneers who venture into the lands where they thrive.

Not long ago, an American research team went into the Malayan jungles and conducted an amazing yet little-publicized experiment. Object of the expedition was the conquest of the [*Continued on page* 156]

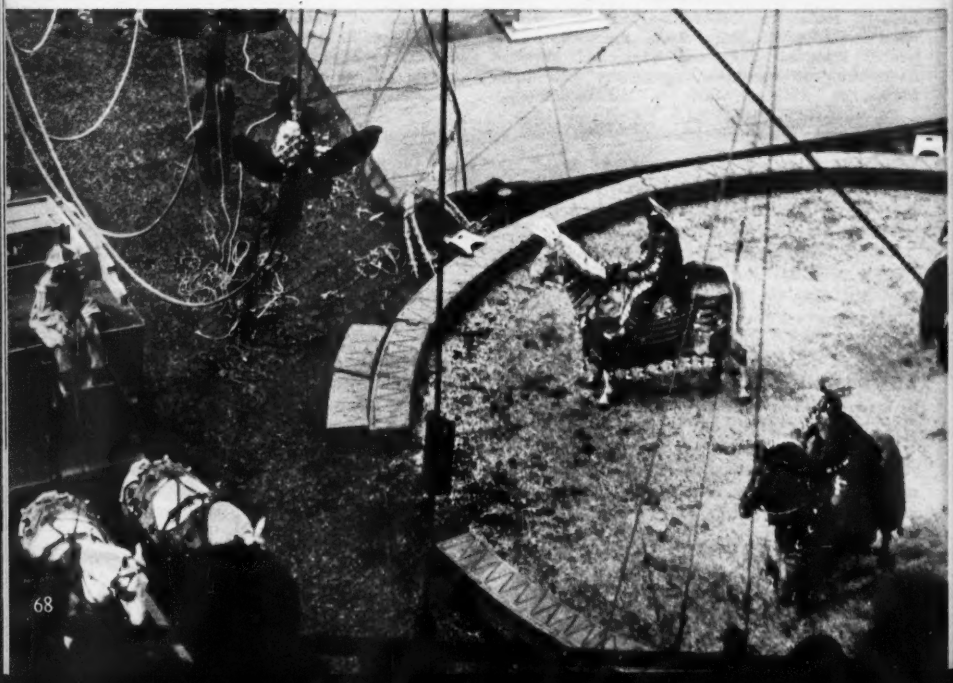
In his apartment, Dick Barstow works up drawings for Barnum and Bailey's huge opening parade or spec. These include over 1,700 performers.

Using toy animals and a miniature setting, he times every separate piece of action with a stop watch. Entire spectacle takes 12 minutes.

HOW THE CIRCUS IS BORN

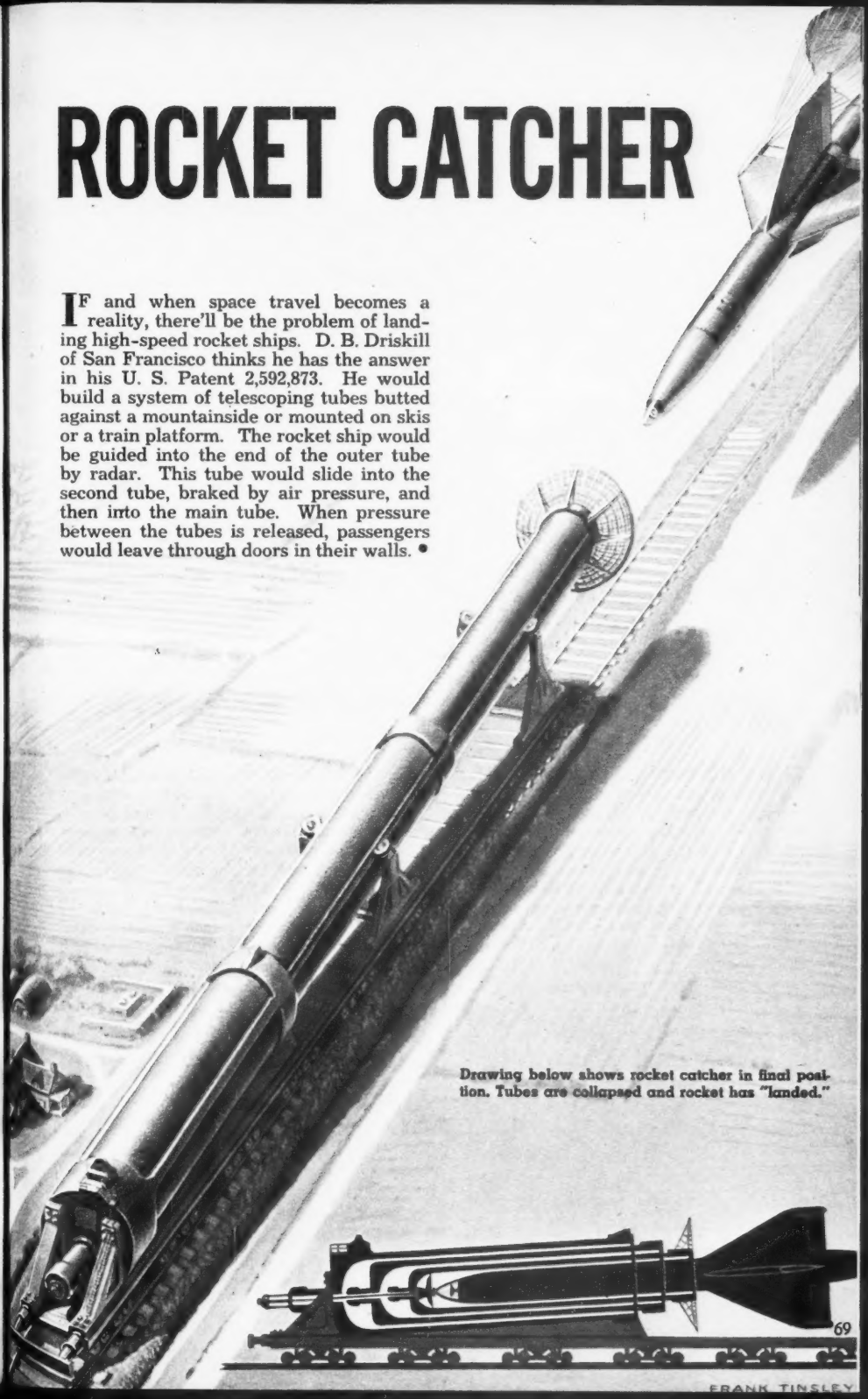
FIVE years ago John Ringling North asked Dick Barstow to direct and stage the Ringling Bros., Barnum & Bailey circus. "But I've never seen a circus," said Dick. "That's all right," replied Mr. North, "I'll take a chance on you." Since Mr. North was willing to gamble on his talents, Dick decided to tackle the job.

Thus, six months before the circus opened [*Continued on page* 152]



ROCKET CATCHER

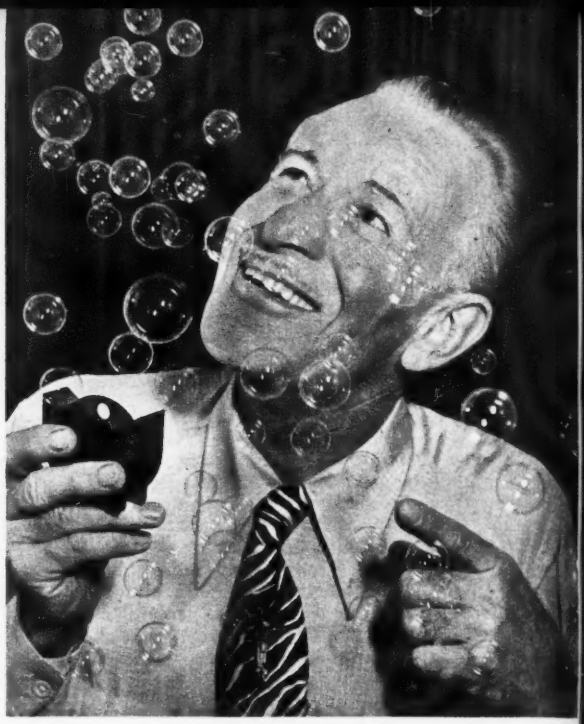
IF and when space travel becomes a reality, there'll be the problem of landing high-speed rocket ships. D. B. Driskill of San Francisco thinks he has the answer in his U. S. Patent 2,592,873. He would build a system of telescoping tubes butted against a mountainside or mounted on skis or a train platform. The rocket ship would be guided into the end of the outer tube by radar. This tube would slide into the second tube, braked by air pressure, and then into the main tube. When pressure between the tubes is released, passengers would leave through doors in their walls. •



Drawing below shows rocket catcher in final position. Tubes are collapsed and rocket has "landed."

FRANK TINSLEY

Fisher, former vaudeville, radio and movie star, took up inventing gadgets as a hobby but hit the jackpot with his bubble maker. It is a popular toy in the U.S., Canada, South America and Europe.

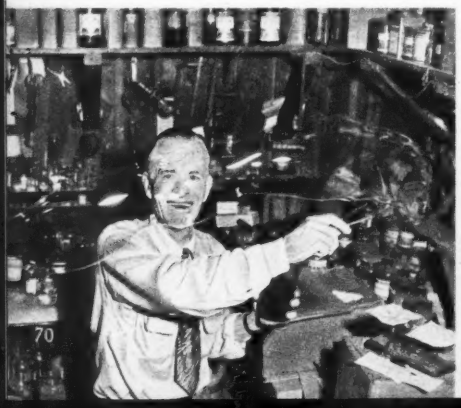


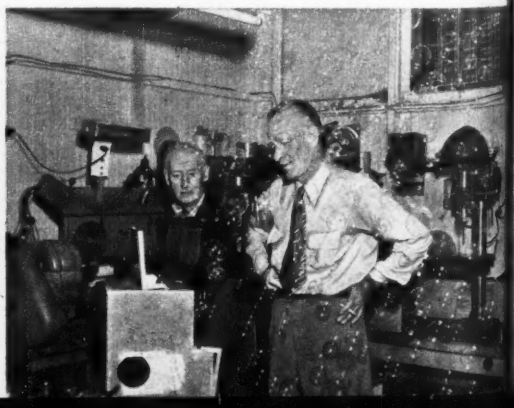
Meet "Billion Bubbles" Fisher

"THREE things will never die," says Nat Fisher of Hollywood, Cal. "They are marbles, tops and . . . bubbles." Fisher is the king of bubbles. In his huge plant in Burbank he turns out miniature plastic bubble-making machines which are sold in novelty stores throughout the country. Each is a small perforated wheel revolving in a well containing a special liquid which took him eight years to develop. Blowing on the holes produces hundred of bubbles.

Department stores use his giant automatic Billion Bubbles Machine which turns out 6,000 bubbles per minute. Ringling Brothers bought 20 of them which as a team produce 120,000 bubbles per minute. California Institute of Technology uses them in its wind tunnel experiments. In the University of California they help weather researchers study air currents.

Fisher's small machine is sanitary since no part touches the mouth. And the liquid is stainless and harmless. Their bubbles are blowing the inventor a fortune. •





THIS MONTHS PRIZE
gadget

The safety switch assembly (1) mounted on the front of the fire wall operates in conjunction with overload protective relays (2) to block off the whole electrical system instantly in case of a short-circuit. A separate turnover crash switch (3) cuts current in the event of an accident. Control switch for all three is mounted on dashboard, includes a warning buzzer to alert absent-minded drivers.

Electrical Shortstop

IF your car ever caught fire from a short-circuit, or the horn began to blow and you couldn't shut it off, or your battery went dead because you left the radio, lights or ignition switch on overnight, you'll hail Edward W. La Roza's invention. Inspired by an embarrassing moment years ago when his own car almost burned because of some defective wiring, this Mamaroneck, N. Y. electrician has come up with an ingenious device which cuts out the battery and generator automatically in case of trouble from any electrical source, even a crash or a roll-over.

While waiting for his final patents to come through, Mr. La Roza is looking for a manufacturer to mass-produce his electric short-stopper. Meanwhile, MI is happy to aid his one-man campaign against fires, inconvenience and embarrassment for motorists by sending him our best wishes and a trouble-free check for $50. •

In the shop behind his home, inventor La Roza looks over the safety switch assembly which is an important component of his short-stop device.

Down to the Sea in ...Ships?

Want to get away from it all? Then take a trip on the briny—but not in an ordinary ship. Take a lesson from these seafarers.

By Ed Kelly

George Hill, ex-tycoon, tired with business worries, took a four-day raft trip on Biscayne Bay.

Rub-a-dub Emil Meyer, speedboat builder, went to sea in a 50-year-old bathtub supported between balsa-wood pontoons.

ARE you bored, restless? Are you fed up with your job, bothered and bewildered by routine?

Yes? Then what you need is—no, not pills or vitamins—not just a new job—you need to get away from it all!

And the best way to do it is a sea voyage.

For ages, men have escaped from dull, routine lives by going to sea. Probably the first man to do so was a caveman who got fed up with his mother-in-law, conked her over the head and shoved off down river in his hollow-log canoe. He may have gotten no further than the next tribe 30 miles away where he settled down with a new wife—and a new mother-in-law.

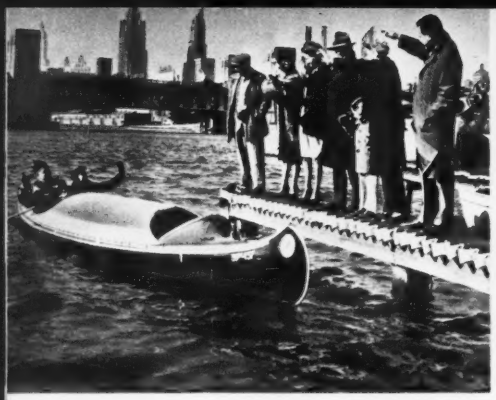
Today's adventurer goes further. He thinks nothing of crossing oceans in a 20-foot boat and staying away for years.

The size of your boat is important. You're not really escaping if you go on a ship or even a tramp steamer and let others do the work. To really get the taste of salt spray on your lips, you need a small boat, a few supplies, a friend or two and—a destination.

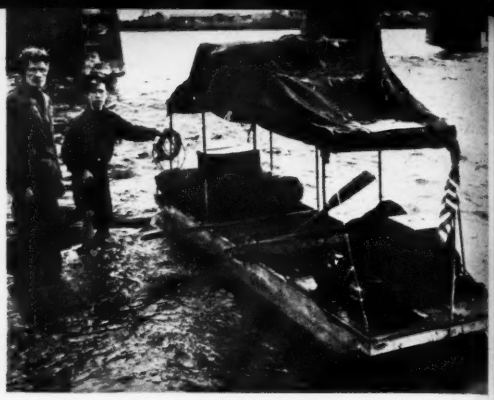
Where to go? The whole Seven Seas are open. Young Bob Smith, a Merchant Marine veteran, chose the favorite get-away-from-it-all spot, Tahiti, and set out in an 18-foot sloop, alone, from Long Beach, California. When he raised sail six years ago he said he was going to stay there until world conditions settle down. He must still be there.

Roland Barney set his course for Tahiti, too, in a 26-foot ketch. He estimated he could make the 4,000-mile voyage in two months. For emergencies, his converted war surplus Navy whaling sloop was equipped with a two-cylinder engine and 25 gallons of gasoline.

Men who go down to the sea in boats can forget clocks—even calendars. They live by natural time—sunup, sundown and the change of seasons. Alfred Peterson, a New Yorker, started his long odyssey in April 1949 from Miami, in his 33-foot cutter Stornoway bound for Sydney, Australia. En route he visited the Galapagos Islands off South America famed for their giant turtles, the Marquesas Islands, Ahe in the Tuamotou group, Fiji, Raratonga and New Zealand. He reached Sydney in March 1950, stayed a month and headed home via New Guinea, Indonesia and the Mediter-



Ray Sullivan and his wife, Madeline, wave goodbye as they start their canoe trip down the Chicago River with West Indies as their goal.



A 12-foot, homemade, flat-bottom scow carried Herbert Thomas and son, Jimmy, with 600 pounds of supplies down Missouri toward New Orleans.

ranean, arriving in New York just about three years after setting out from Miami.

Clyde Deal completed his 8,000-mile trip in a mere 12 months. He was third mate on a Swedish freighter when he decided to fulfill a long-dreamed-of plan to cross the Atlantic alone in a small boat. Looking around Stockholm where his ship was docked, he found the Ran, a 33-foot engineless sloop. The first leg of his trip took him to Lisbon which he reached in November after starting from Sweden in June. From Portugal he went to Casablanca, the Canary Islands and then across the Atlantic. For the long 4,400-mile sail from the Canaries, his only companion was his dog Tenerife.

A young Swiss, Hans Von Meiss-Teuffen, made a solo crossing of the Atlantic just on a bet with his brother, a major in the Swiss Air Force. He bet he could make the trip in his 33-foot ketch in 60 days. He landed at Fisher's Island, New York, just 58 days after leaving Morocco with a three-months' supply of food and water.

Not content with the normal hazards of sailing deep waters in a small craft, two young men, a Frenchman and an Englishman, crossed the Mediterranean in a 16-foot rubber raft equipped with a sail, two pairs of oars, a radio transmitter, two cameras, 3,000 yards of film and a harpoon. They carried no food or water. They were trying to prove they could survive on fish and sea life. For water they used a mixture of liquid taken from harpooned fish.

One of the most unusual trips ever attempted was made by Major Frederick Carlin of Australia who took his American wife on a round-the-world honeymoon in an amphibious duck. The 17-foot craft was converted by Carlin at a cost of $9,000 or roughly $500 a foot! The Carlins' first attempt to cross the Atlantic ended just 270 miles east of New York where they ran into mechanical difficulty and were picked up by a Montreal-bound tanker. Nothing daunted, they set out again from Halifax bound for the Azores. Leaving Halifax on July 19, they reached Madeira

The sociological experiment Lethargia with its two-man, two-woman crew docks at Memphis two months after leaving New Kensington, Pa.

It had turned over when one week from home and almost all supplies were lost, but the crew made her shipshape, continued toward New Orleans.

Three soldiers from Columbus, Ohio, made boats from surplus airplane gasoline tanks and paddled and drifted down the Ohio and Mississippi.

Arriving at Dyckman Street, New York City, are eight Canadians who paddled their canoe 450 miles down the Hudson River from Lake Champlain.

on December 15. From the Azores they planned to go to North Africa and drive all the way to Indo-China, then take to the water again and cross the Pacific.

One beauty of crossing the Atlantic in a small sailboat is that it's cheap. A couple of young Englishmen named Smith made the trip in a 20-foot boat in just 42 days. They built the boat, appropriately called the New Hope, in a theater basement in Halifax. When the weather kicked up, they lashed a canvas sheet over the entrance to the tiny six-by-four-foot cabin and huddled on their bunks until the storm blew over. For most of the 3,000 miles they and their food were soaking wet.

Two years later, Stanley Smith made the crossing in the other direction in the same boat with a different companion, a schoolmaster named Charles Violet. The trip was sponsored by The Festival of Britain and the Horlick Malted Milk Company and took four months because they went by the southern route touching at the Azores. They averaged 69 miles a day but made as many as 125 on some days. On the other hand, they were blown back as much as 50 miles a day by adverse winds and gales. They brought with them a cargo of British goods for the American market including Whitney Point blankets which were originally traded with the Indians in 1669 for beaver skins and have been imported into America ever since.

Many men have cherished the idea of a long sea voyage in their hearts for years before being able to achieve their dream. Warren and Faith Christianson of Minneapolis spent years planning their 15,000-mile trip down the Mississippi, through the Panama Canal and up the Pacific Coast to Alaska. During the years of waiting, they designed and built their own boat, the schooner Tantalus. Their dreams came true in 1949 when they set out with their dog and a two-man crew.

The Stanley Deshews of Grand Rapids, Michigan, had been planning for 13 years to take a year off and see the world. When at last they were [*Continued on page* 165]

For their honeymoon cruise Mr. and Mrs. Fred Carlin chose an amphibious duck and crossed the Atlantic. Here they have arrived at Deal, Eng.,

In their 16-foot rubber raft Heretic, Dr. Alain Bombard of France and Jack Palmer of England battled the Atlantic, living on fish and plants.

A MONEY-MAKING

Creek basin during clearing is shown in photo above. Background photo is aerial view of Rainbow Lake. Clubhouse is at lower left. Holding pond is in foreground.

His Fish Are His Fortune

By William H. Osborne

View toward clubhouse from top of the earth-fill dam which is about 30 feet wide. Highway 30 is adjacent to house.

Fishermen, and girls, can catch all the trout they want, for $1.25 a pound. They are brought to Honeyman for weighing.

STRANGERS driving on U. S. Highway 30, eight miles west of Portland, Oregon, hit the brake when they see a sign, Trout Fishing, Rainbow Lake. Many of them stop to fish and together with people who are familiar with the place, they put many thousands of dollars each year into the cash register of Bill Honeyman's trout farm.

Honeyman has found a way to keep fishermen honest and make a good living for himself at the same time. Now when a local trout angler goes out and fishes all day in vain he can stop by Rainbow Lake on the way home and easily take a limit of big ones. And he won't be lying to the little woman when he swears he caught them . . . at $1.25 a pound. Unlike other farmers Honeyman doesn't have to pay harvest hands. His customers do the harvesting and pay him for the privilege.

Bill Honeyman, hardware clerk in 1937, had saved $500 and decided he was ready to go into business. He talked over the idea with his wife, Dorothy.

"What kind of business can a man buy with $500?" she asked.

Bill was rather sheepish about his idea but finally blurted out the opinion that a fish farm would be a good business for them.

"But where can you buy a farm with only $500 down?" she asked again.

Bill had to admit that he didn't know. He thought they should start looking around. From that time on all their Sundays and holidays were spent scouting the countryside for a place that had the makings of a fish farm and could be purchased on their terms.

After several months they located 51 acres of logged-off land which was choked with brush intermingled with second-growth fir and alder. One thousand feet fronted on U. S. Highway 30. Three springs on the upper reaches of the place converged into a small creek flowing through a 14-acre basin just above the highway. Walking down the little creek Bill noticed a small trout scurry for cover. The creek had to be trout water.

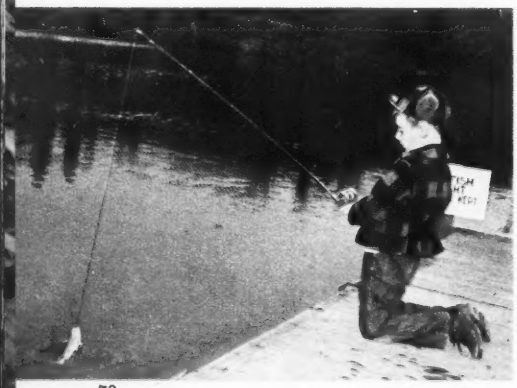
He followed the little stream down to the road. Highway 30 had been realigned at this point to straighten out a slight curve. An underpass for cattle through which the little creek flowed was left intact when the old road bed was abandoned. The new highway fill nearly paralleled the old only 60 feet north.

The old road bed appeared sturdy enough for a dam. It was 16 feet

When trout are biting, it doesn't take long to fill a creel. This young lady caught six nice ones in less than two hours.

Bill and Dorothy Honeyman stand before the fireplace in their Rainbow Lake Lodge. Their service to fishermen netted them $12,000 last year.

Children whose fathers are trout lovers are steady customers. There's nothing like breaking in a boy where trout are many and hungry.



in height from the creek bed. By using the culvert as a spillway the cost of completing the dam would be negligible. By filling in the 60-foot space between the old and new highway an access to the dam and a parking lot could be built. A more perfect setup for what Honeyman had in mind could not be found.

Even before checking with the highway commission to see if he could obtain permission to construct a dam, Honeyman approached the owner of the property. Yes, it could be bought for $2500 and a $500 down payment would be acceptable. Honeyman didn't waste time arguing about the price. He plunked down his money and hurried to the highway commission.

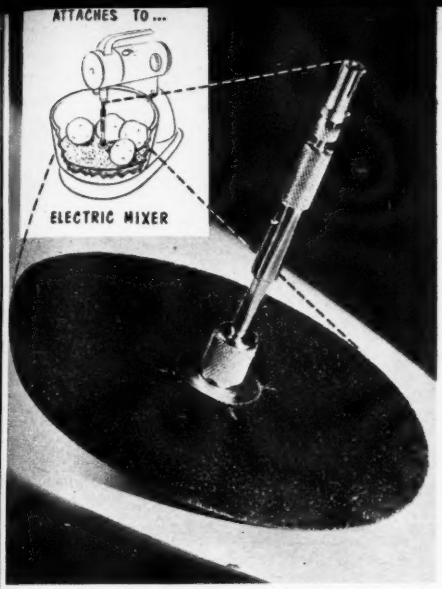
The highway commission gave him a permit to dam the creek providing their engineer could check for seepage each time the water level rose a foot.

Honeyman then hurried to the State Fish Commission. In most states it is necessary to get permission to build dams on streams which are potential fish-spawning areas. This creek was considered too small for salmon spawning and the permit was granted.

Clearing the creek basin with crude implements at night by lantern and on week ends was a slow job. Honeyman talked some of the neighboring farmers into lending him earth-moving equipment which helped speed the work. He still kept his job in the hardware store. By this process it took two years to get the basin cleared and filled with water.

Meanwhile he built a crude trout hatchery at the upper end of the lake and a freezing plant to store food for the trout.

Honeyman [*Continued on page* 169]

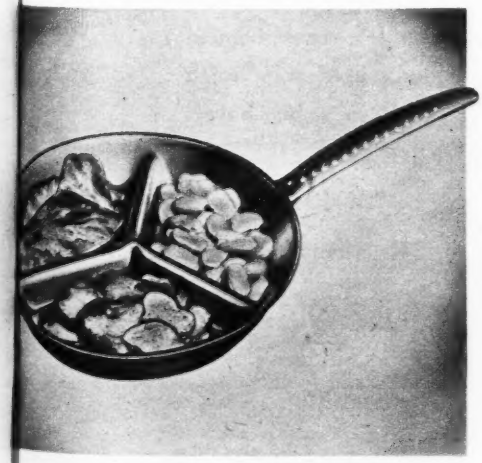


Home-A-Peel is a new idea in vegetable and fruit peelers. It snaps into your electric mixer, tumbles the potatoes or what-have-you, and sandpapers off the skins. Univex Products, Somerville, Mass.

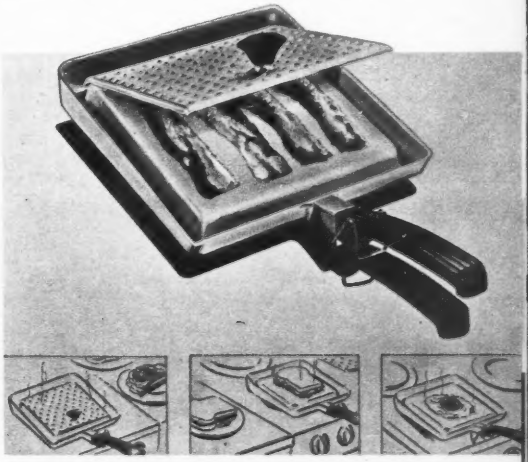
Picture Heater has heating elements fastened to the back. When hung on your wall and plugged into an electric socket, it projects radiant heat into the room. Electrofilm Corp., North Hollywood, Cal.

NEW for the HOME

Three-Way Skillet cooks three separate foods at the same time, leaving only one pan to wash. Fine in home or camp for warming leftovers, preparing baby foods. Fireside Shop, South Bend, Ind.



Magic Grill for bacon, French toast, sandwiches, has cover to prevent grease from spattering. Use open for eggs, pancakes. Grease drains into gutter around sides. Magic Products, Hammonton, N. J.



COVER STORY

World's Smallest Plane—

The Sky Baby is a real midget. It's recommended for aviation enthusiasts who don't need very much leg room but crave to get places in a big hurry.

Turning the plane is easy for Ray Stits, above. He just grabs the tail and swings. She doesn't interfere with traffic when towed on the road, below.

She's a solo plane just big enough to hold Bob Starr, above. Ray Stits kneels alongside. It's a pigmy next to a C-54 Douglas Skymaster, below.

DESPITE some skepticism, Ray Stits and Bob Starr designed, built and flew the world's smallest plane. They christened it Sky Baby and its measurements prove the aptness of the name.

The plane has an overall length of 9 feet 10 inches, a 7-foot 2-inch wingspan and is 3 feet high. Its wheels are 10 inches in diameter. Weight is only 452 pounds.

When co-builder Starr took designer Stits' "big" dream into the wild blue yonder at Airmotive Airport, Chino, California, another chapter in aviation history was written.

The two men had spent 13 months building the plane at a cost of $2,800 including a $600 engine. It can fly 250 miles per hour and stay in the air for 30 minutes. It holds 5 gallons of gas for its 180-pound 4-cylinder Continental engine. •

Photos at left and below show Sky Baby taking off. Small wing span means high landing speed.

Even a small jeep dwarfs the tiny plane. Engine is only 80 hp. Length is just short of ten feet.

MI Tests the '53 FORD

"The best Fords in the company's history" come up with anti-bottoming features that vastly improve the ride—but that new overhead-valve V8 engine isn't here yet.

By Tom McCahill

BOTTOMS up! is the big 1953 Ford news. No longer will Gramps' teeth go sailing into the windshield at the crash of a pot hole. Bottoming, that unluxurious ride factor that sounds like two trains meeting head-on and feels like a mule kicking you in the pants and jamming your derby over your ears as your head tries to go through the roof, will no longer take place in a Ford.

I'm not kidding, this is the big news—period. It may sound a little unbelievable to you city kids who seldom stray from de luxe super pavements, where bumps of man-sized proportions are practically non-existent, but your country cousins demanded the big change. W. E. Burnett, Ford Car Engineer, told me there had been a number of gripes about bottoming from '52 buyers, calling for a drastic program just to lick this one complaint. For my three

A new grille on the 1953 Ford, left, is the major change in the front-end looks department over the 1952 model at right.

unmechanical readers in East Coonskin, Arkansas, let me explain that bottoming is the unpleasant experience which occurs when an automobile's unsprung weight joins the sprung weight—bump!

The ideal design for any car, ride-wise, is to have as much of the weight as possible supported on springs. The wheels and axles must absorb direct road shock and the springs attached to these function to keep the shock from telegraphing through the body. Theoretically, when hitting a bad hole or bump, the wheels and axles get a 3 to 4,000-pound belt in the teeth by a big, bare fist. The sprung weight gets the same blow but with a 20-ounce glove (springs and shocks) absorbing much of the sock. Bottoming usually occurs when a car runs into a deep depression or fast dip and then actually crashes out of the hole by sheer force of momentum. This is often too harsh for the springs and shock absorbers to soak up, the spring-supported bond between the body and axle is momentarily collapsed and they come together with a jarring smack.

Of course, there are many ways to spring a car and more shock absorber designs than have ever reached the drawing board, because this is a very important feature in the evolution of automotive design. Ford has now succeded in getting an expensive feeling ride into their jazzy low-priced line. To accomplish this, Ford actually went out and took plaster casts of some of the pot holes across the country, made famous by repeated complaints, and had them duplicated exactly on their proving grounds.

The first test I made was with an engineer driving a 1952 Ford over a series of these cavities at a steady 50 miles an hour. At each one, the '52 Ford bottomed with a crash and the back-seat passengers in this test were actually forced to duck way down to avoid possible skull fractures. Then we got in a 1953 Ford and repeated the Charge of the Light Brigade into the same man-made horrors at the same speed. The '53 soaked them all up like a sponge! Naturally, we felt the bumps but the car didn't bottom once and the comfort was far superior. The problem was solved by increasing the up-and-down travel of the front wheels. This, roughly, means a longer crash-absorbing stroke and a longer return, aided by improved higher capacity shock absorbers and rubber insulators, all of which overcome the return snap that formerly sent heads to the roof top. Ford has added

This '53 Sunliner convertible which Tom is seen driving on the famous Ford proving grounds test hill, opposite page, looks about like the '52.

Tom inspects the 1953 Ford tail light, one of a few styling changes made in this year's models.

New type parking lights placed at either ends of the grille, and open air spinner, are innovations.

Medallion commemorating Ford's 50th anniversary and placed on the steering hub is new this year.

The slash of chrome trim on the rear fenders of the '52 Ford has been given an additional strip.

chassis crash compression bumpers to the front suspension assembly which wears out the road shock before it can do much damage.

I asked Mr. Burnett how this improvement might affect roadability in cornering and he said it had bettered the stability over that of the '52 line. However, when I made my tests a few hours later, I failed to find any cornering improvement. But it was certainly just as good as in the 1952 cars. Actually, Fords were always pretty good at holding, by American standards, providing the driver learned how to get the most out of the car. Cornering a Ford calls for a little technique which, once mastered, gives you a very fair roadable car. The corner or curve should usually be cut extra close *inside*, with a slight amount of goosing to boost you around. Dead stick cornering (without power boost) gets a Ford around corners a little sloppily. Incidentally, on my latest swing through the Detroit nut and bolt houses I found many of the engineers talking cornering and roadability. On several of the cars I tested, the engineers proudly claimed better cornering quality than before. To my way of thinking, this is a *great* trend—if it's kept honest. I'd much rather see the Detroit gang getting into a better cornering contest than the present horsepower race. Horsepower without roadability can be as dangerous as sailing low over a reform school skeet shoot in a balloon.

The rest of the 1953 Ford story called for a little first-rate digging. The horsepower of the overhead-valve Six we reported on last April is still 101 and the horsepower of the 1953 V8 is still 110, same as the 1952 V8. There are no mechanical changes over last year. The V8 is very much the same engine Ford introduced 20 years ago. Through the years this once truly great mill has been given hormones through better carburetion, manifolding and cleaner exhausting.

Cam and ignition changes took place and the horsepower was boosted to 110. Nevertheless, the V8 Ford engine of today is a very close relative in every way to its original parent, the then sensational 1932 V8. In other words, it's old enough to vote! When I tested the new Ford Six last year, I was given to believe that the 8-cylinder size would have a brand-new overhead valve V8 for 1953. When I asked about this I was told that tooling restrictions and some other gimmicks had come up to postpone the new engine once again and that it may materialize "next year."

A major change such as a new engine is a much bigger deal for a company like Ford, or Chevrolet, than for comparatively small producers such as Dodge or Studebaker. Chevy and Ford, being by far the largest automobile builders in the world, must take twice the risk in introducing anything as important as a new engine. These top sellers, in changing even minor designs, must assume fabulous commitments running into millions and millions of dollars, far greater than the small-by-comparison producers such as Cadillac or Packard would have to undertake for a similar switch. Tooling changeover is many times what it would be at Nash, for example. Sub-contractors who supply valves, fuel pumps and the hundreds of other items needed must be ready to go into full production on newly-designed units all at once. Because the biggest three—Chevrolet, Ford and Plymouth—are set up for enormous mass production, one design boner could cost millions of dollars to correct where a small company like Kaiser, for example, could make the same correction for a few thousand. All of the top three are overdue for new power plants but before you ever see them they will have tried, tried and tried again in order to eliminate any possible bugs. Ford knows very well that its present V8 has proved itself as reliable as a Republican majority in Maine and at this writing it can still give a very respectable accounting of itself in the performance department when equipped with overdrive.

The job I tested was a four-door V8 with Fordomatic transmission. This transmission has proved very popular in city traffic and the suburbs but it definitely makes the Ford a bearless bearcat. Zero to 60 on a corrected speedometer takes 22 seconds. On an uncorrected speedometer it only takes 17.2 seconds, which shows how much difference there is between a regular speedometer reading and a corrected reading. Zero to 60 using Low and Drive of the Fordomatic came out to 19.8 seconds. (This is a long way from bomb performance by any standards but the V8 fan who wants his Ford as snappy as it looks will still find digability by sticking to an old-fashioned shift transmission with overdrive.) On the high-speed Ford track the Fordomatic handled nicely and there weren't any signs of over-mushing in the hard corners. On the 32 per cent [*Continued on page* 167]

Uncle Tom admires the scenery (and Joe) while sitting in Alvis drophead coupe (convertible) with the top half furled. The classic lines are in sharp contrast to current U. S. styling.

McCahill Tests the English ALVIS

Top quality workmanship through and through is the hallmark of this car but you'll have to fork out $4,500 to own one.

By Tom McCahill

THE fact that you can get drunk on a buck's worth of moonshine won't wipe out the very limited market for good cognac. A bearskin coat is a lot warmer and far more functional than mink but there is no evidence at this writing that the social set is tossing away its sunburned weasel hides in favor of bear pelts.

What this is leading up to is the fact that the 3-liter English Alvis is a car to be enjoyed by the true connoisseur and was not built for Joe Blow or the likes of me. It is a motor car of distinction, a white-tie-and-tails bucket that will set its owner off from the common herd like three ears, or red, white and blue hair. Even the name Alvis is distinctive. No one, not even the manufacturer, knows what it means or who or what it stands for. The company was actually started by a character named T. G.

John back in 1920 and he gave the car the Alvis handle. Rumor has it that this very fast car, in those introductory days, was named after an unknown babe of equal specifications.

The Alvis costs in the vicinity of $4,500 delivered at Fergus Motors in New York City, so let's take a peak at what the buyer gets for this Cadillac dough. All through the twenties and into the thirties the name Alvis, like the English Riley, was associated with top-flight, out-and-out sports cars. In 1939 the 4.3-liter Alvis in stock condition could get over the ground at 105 mph and a slightly hopped-up job turned a lap at Brooklands at just under 120. Today's cars, like today's Rileys, couldn't reach 100 with a Cunningham towing them. Today's Alvis handles and steers similar to a sports car, corners better than any Detroit barge but is definitely not a 3-liter sports car by the hardest twisting of the imagination. It is, however, a moderately high-speed cruising automobile with magnificent road shock-absorbing qualities and quick steering which improves if you goose it around corners with a slight throttle.

To get back to what the buyer gets for his Cadillac dough, let's take a close look at its appearance. The Alvis doesn't resemble every other car at the country club. If you didn't know the price and someone told you it cost as much as a Cadillac, it would seem more than reasonable after you looked it over. The top-grade leather upholstery smacks of quality and greenbacks, as do the general finish and paint job. These automobiles actually look a lot more potent and faster than they are. The five-passenger convertible (called the drophead coupe) suggests the illusion of being a real 100-mph cricket instead of its actual 88 or 89 top speed.

This is a big car, appearance-wise, with plenty of trunk room and loads of space for the driver and passengers to throw fits in if desired. The styling is unmistakably British of the classic school. It has an every-thing-in-its-place-and-a-place-for-every-thing look without being martyrish about it. Frankly, it's a car built for snob appeal, to impress the peasants in a delicate way that inside these doors will be found a Groton accent, either false or the real McCoy. It will appeal to the veritable man of distinction, not the red-nosed whiskey slob.

Joe Ferguson, Jr., of Fergus Motors, brought a two-door convertible out to my house for testing. At first we played with the one man-plus-fourteen girls top. You can run it with the front half rolled back in the best continental, Berry Wall style, a feature intended to expose the contents of the back seat to the hoi polloi while the occupants remain in the shade and the

On "McCahill's Hill" our expert, trailed by an MG, found that the 3-liter engine had plenty of torque for getting up the 28 per cent grade without any distress or bucking.

Wide doors and a pivoting arrangement on the front seat backs make getting in and out easy.

Finest quality, real leather upholstery smacks of class but helps up the price of the Alvis.

driver gets a case of sunstroke. This is sometimes known as a de Ville top. (Where the hell Caddie ever got the Coupe de Ville name for their hardtop is still a mystery—but, then, have you seen Buick's so-called sports car, the Skylark?) Back to the Alvis. Actually, with patience and a mind for jigsaw puzzles it is possible to get the top to go flat when it's all the way down but it takes a load of doing.

One thing I was forced to admit as I drove this basket over the countryside is that it does have the eye appeal of a Marilyn Monroe riding in the subway in a Bikini suit. At every light, eyes from other cars gawked all over us. When I pulled up to a curb in a small New Jersey town the car was instantly surrounded by a goodly part of the populace with the usual 1,001 questions such as how fast will it go and where was it made and how much did it cost? There are hundreds of guys to whom this sort of eye-catching stuff appeals. For any joker with the personality of a mouse and a burning desire to be noticed, the Avis should fill the bill. It is a swell curb-side conversation piece that will do more than a barrel of Dale Carnegie's books to help a meek guy meet hundreds of his fellow earth dwellers. For the dyed-in-the-wool exhibitionist who finds trouble in attracting attention even while wearing genuine edelweiss in his Tyrolean hat, the Alvis is a truly gone ball. He can rear back with bared teeth and sneer at the curious while his wife Clarissa is fighting out the price of lamb chops in the local super market.

On the other hand, if you are just a guy who appreciates fine things, especially in automobiles, and you are not interested in fantastic speed but want a fine handling road car that stands out from the Detroit stampings, the Alvis might be for you. The only thing I found that was not up to snuff was that the gearbox sometimes proved a little hard to box. This four-speed grinder was a bit tough to get into first gear. In fact, first gear had a habit of hiding entirely and I discovered the best way to find it was to go into second and then right ahead into first, unlike the Mark VII Jag which is so easy to get into reverse when you think you are in first. I imagine an Alvis owner can track down first gear after a few hundred miles.

I made my first tests on my 28 per cent half-mile hill. The Alvis had lots of torque for getting up, without any distress. On my standard hard curve tests, the Alvis held the road in the best John Bull fashion and could take my curves at higher speeds than any American car with the exception of the Hudson, with which it is about on a par. However, it had much faster recovery

SPECIFICATIONS

MODEL TESTED:

1953 English Alvis drophead coupe (convertible)

ENGINE:

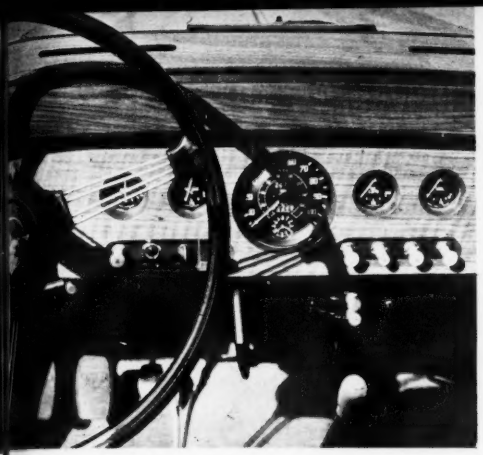
6 cylinder, OHV; bore 3.3 inches, stroke 3.5 inches; piston displacement 183 cubic inches; maximum torque 147 foot pounds @ 2200 rpm; brake horsepower 105 @ 4000 rpm; compression ratio 7.1 to 1

DIMENSIONS:

Wheelbase 111½ inches; overall length 182½ inches; tread 54⅝ inches front, 54⅝ rear; width 66 inches; height 62½ inches; weight 3,192 pounds; standard tire size 6.00x15; gas tank 17 gals

PERFORMANCE:

0 to 30 mph, 6.4 seconds
0 to 50 mph, 13.11 seconds
0 to 60 mph, 18.6 seconds
Top speed, 90 mph



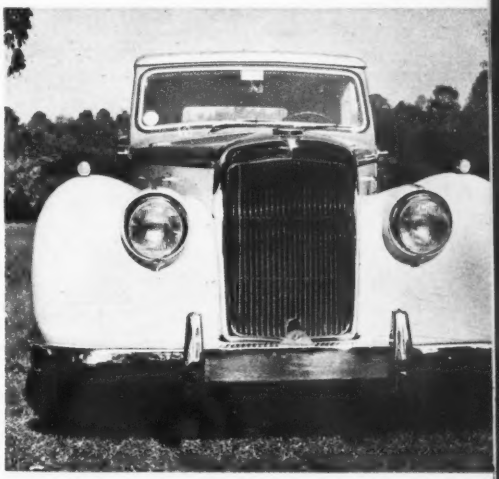
Walnut instrument panel has usual dials plus ignition warning light, kilometer-speedometer.

What, no spare wheel? It's mounted underneath the luggage compartment, thus giving more space.

than the Hudson in coming out. As stated earlier, this called for a little throttle boost. Taking the same curve at the same speed without throttle found the Alvis drifting far off course.

My acceleration tests showed the Alvis getting up to a corrected 60 mph from zero in 18.6 seconds which is highly respectable considering the small, 183-cubic inch size of the six-cylinder, overhead-valve engine. Top speed proved just under 90, a true "near 90" not a Michigan version.

In summing up, I was very impressed with the Alvis as a de luxe hunk of transportation belonging more in the Rolls-Royce conservative luxury, refined glamor school than in the racy sports car group. It has a boatload of eye appeal, definitely belongs in front of the better clubs and shouldn't be driven in anything lowlier than a $200 suit. •



Wide fenders give the Alvis a 66-inch overall width, four inches less than any American car.

With the top all the way down, Uncle Tom gives the Alvis a whirl through his New Jersey fields.

You Should Have a Bird Dog

The fun you get out of bird hunting now can't compare with the real kick the sport will offer you when you shoot over your own dog.

By Raymond R. Camp
Rod and Gun Editor, N. Y. Times

The author walks up on a pheasant nailed by a Pointer and Setter.

HUNTING upland game without a dog is like fishing for trout with a bent pin—you get a certain amount of exercise but you don't have much fun and usually you wind up buying some hamburger for dinner.

"Why should I get a dog?" an enthusiastic hunter once responded to my suggestion. "Joe has a setter, Jim has a pointer and Harry has a beagle. Any hunting I do is with these guys so I need a dog like I need another arm."

The answer to that was too obvious, even where I was concerned. I could think of a number of occasions when I could have used a third arm but I didn't bother to point them out. If that hunter only could have realized it, he was missing at least 80 per cent of the sport. His friends with dogs had something which provided them with a lot of pleasure, and he was just going along for the ride to get that pleasure second-hand.

I could advance a number of arguments on the conservation value of a dog, how it not only finds more game for you but also prevents the escape of winged birds that otherwise would never go in the bag. The important return, however, does not involve these things. It involves the kick you

A Golden Retriever proudly brings in a bird he found and flushed for his equally proud owner.

Grouse are wary birds and hunting them is tough work. A slow Setter with a keen nose is a help.

get out of hunting over YOUR dog. It's a thrill that can't be beaten when you see your pooch turn in a performance worthy of a champion. And let me say here and now, you can scorn a man's car, blaspheme his wife, call him a bum—but DON'T criticize his bird dog. You're apt to be murdered, and any hunting judge will give your murderer a suspended sentence.

I've bumped into a lot of men who really wanted dogs but were unable to make up their minds as to the breed. Actually, breed isn't too important. There are only five really popular pointing breeds today—the Pointer, the Setter, the Shorthair, the Weimaraner and the Brittany. Any one of them will make a fine pet, a pleasant companion and a good gun dog. Some of these are more adaptable to certain game birds and certain types of hunting than others. But you will find all of them are being used successfully on every type of game bird and in every kind of cover.

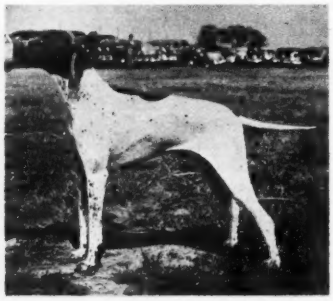
The big, rangy Pointers are more popular in the South and there is a reason for this popularity. In the first place, their thin coat is better adapted to the warmer climate and their rangy build is productive of speed and stamina. The important bird down there is the bobwhite quail and the coveys

Springer Spaniels are small dogs and they work close, turn in a bang-up job on upland birds.

In his duck blind a hunter lines up on a bird. His Chesapeake Retriever gets ready for action.

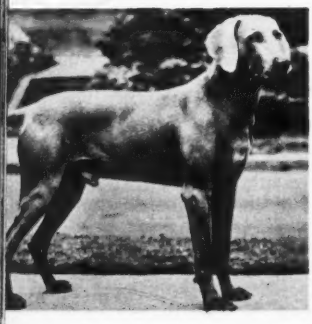
Pointing Griffon is a small dog, works close, has keen nose for all upland birds.

English Pointer runs wide and fast, is most popular breed for quail, pheasant.

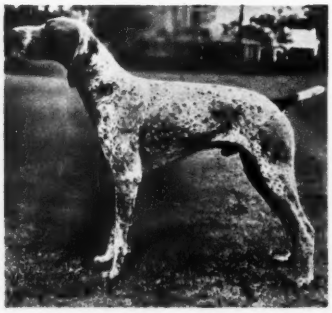


Labrador Retriever works on all birds but shows best when after ducks, geese.

Weimaraner is new breed in U. S., now proving his worth in pointing and retrieving.



German Shorthair Pointer is slow, methodical, can spot pheasants in heaviest cover.



Brittany Spaniel is smallest of pointing dogs, an excellent worker on upland birds.

are scattered quite widely. Therefore, they want what is known as a "big going" dog. Normally the covers are fairly open and a dog can still be seen even when he is quartering the ground several hundred yards ahead of the hunter.

This does not mean that the Pointer is not adaptable to the pheasant, grouse and woodcock covers of the North. In a country where sharp bull-briars are predominent, however, this dog is apt to get badly cut up after a long day in the covers. A Setter, on the other hand, is protected from the sharp thorns by his heavy coat, as is the small Brittany, which has become a very popular breed during the past ten years.

The hunting habits of any bird dog are largely a matter of training and I have seen Setters that could go just as big as a Pointer. The fact that Setters have won the National, which is run on quail in typical quail cover, is proof of this fact for the judges at this trial would not consider a dog that did not cover a lot of ground.

Temperamentally, the Setter is normally a slower, more methodical dog and in the thicker covers of the North these traits are preferred by many gunners. Actually, a big Setter can be trained to work wide if desired. But on grouse and woodcock the big-going dog is invisible most of the time since he is too far away. I have met many who insisted that the Setter made a better combination house dog and hunting dog but I have seen a number of Pointers that qualified perfectly in both. Here again, it is a matter of training.

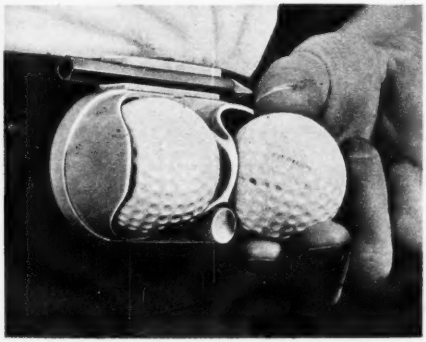
One thing is certain, the Setter can put in a long, hard day in thick cover without suffering the cuts and scratches sustained by the Pointer. Oddly enough, one of the first signs of hard going visible on the Pointer is the end of the tail. The last inch or so of the tail often will be bleeding after only a half-hour in the briars. But the dog recovers quickly and suffers no ill effects.

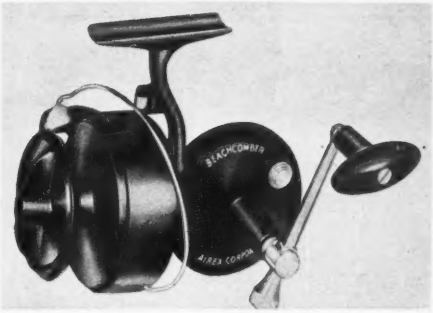
There are several strains of Setters, some represented by very large dogs, others quite small. Some are only slightly larger than the Brittany. The latter has been popular in France for a long time and some of its popularity here can be attributed to its size although its ability cannot be denied, for the little dog has [*Continued on page* 173]

NEW for the SPORTSMAN

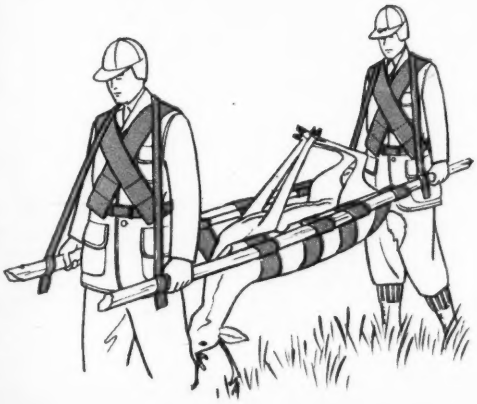
Roll-Out Golf Green is a 96x21-inch putting green for your home, rumpus room or den. It comes packed in convenient store-away tube and includes putting cup. Yund Bros. Distributors and Sales Co., Albany, N. Y.

Ball-Klip made of Tenite clips to golfer's belt in back or at hip, holds two standard golf balls, a tee and pencil for scoring. Tee acts as a safety lock. Exceptionally light, won't interfere with swing. Ball-Klip Co., Boulder, Colo.





Beachcomber by Airex is a large-capacity spinning reel for salt-water and heavy fresh-water fishing. Spool holds 270 yards of 15-pound test monofilament line. Reel has bail pickup and positive anti-reverse. Airex Corp., N. Y.



Deer Carrier is set of heavy canvas straps which are worn over hunter's shoulders, can be made quickly into sling and stretcher. Special loops carry guns. Comes with pliofilm bag to store heart and liver. C. H. Masland, Carlisle, Pa.

MECHANIX ILLUSTRATED
PIN-UP CAR
1931 STUTZ CONVERTIBLE SEDAN
Owner: W. A. C. Pettit, Jr., of Louisa, Va. Engine: 8 cylinders in line, dual overhead cams, 32 overhead inclined valves, four-speed Detroit transmission, develops 156 horsepower at 3900 rpm. Wheelbase: 146 inches. Color: turquoise. Original cost: $4,510.

Car Jacks invented by Vincent Paolucci of Cleveland, Ohio, are installed in front and rear of car. They operate hydraulically, are actuated by pushbuttons.

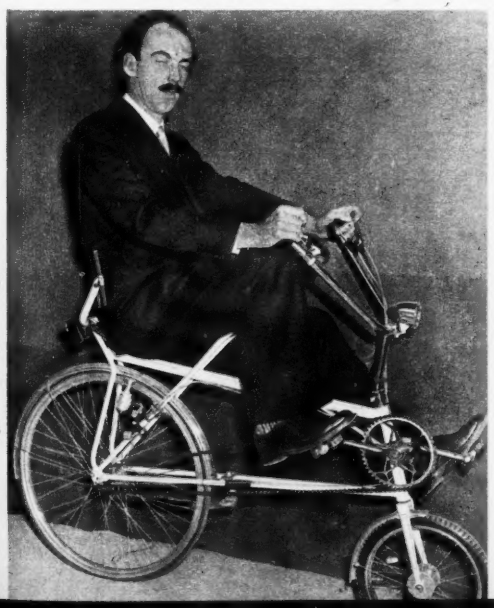
Snow Plowetts in pairs are mounted on front or back bumpers and clear paths along driveway for wheels. Invented by A. S. Jaffe and Mike Morris of Cleveland.

NEW for the ROAD

WIN $25

Send in a sharp, glossy photo of a snazzy car, old-timer or new, posed as at left with owner or a pretty gal. Include self-addressed, stamped envelope (just in case) and all vital statistics about car and owner. Mail to Pin-Up Editor, MECHANIX ILLUSTRATED, 67 West 44 St., N. Y. 36, N. Y.

Armchair Cycle designed by John Searle of Banstead, Surrey, Eng., has seat with back rest, pedals up front, long chain drive. Steering front wheel is miniature.



Scooter Top is made of heavy canvas with unbreakable windshield, is erected in one minute. Waterproof except for driver's legs. Sells in Milan, Italy, for about $12.

hobby

HALL OF FAME

Melville in his Tub cart outside the museum at Stony Brook, Long Island. This model was used to take the Vanderbilt children for rides.

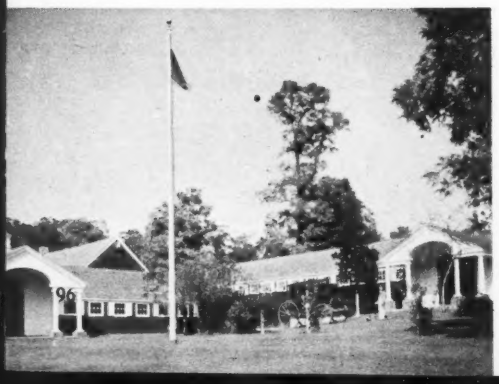
Ward Melville—Shoe King Collects Carriages

BECAUSE his father drove a stage coach for Wells Fargo in the Black Hills of South Dakota many years ago before he founded the Melville Shoe Corporation, Ward Melville, President of Thom McAn Shoes, grew up with a keen interest in these early vehicles. First he bought a Concord Stage similar to the one his father drove. Then he began to collect opera carriages, sleighs, an Irish jaunting cart and others. His collection mounted so rapidly that he had to build a museum in Stony Brook, Long Island, to house them.

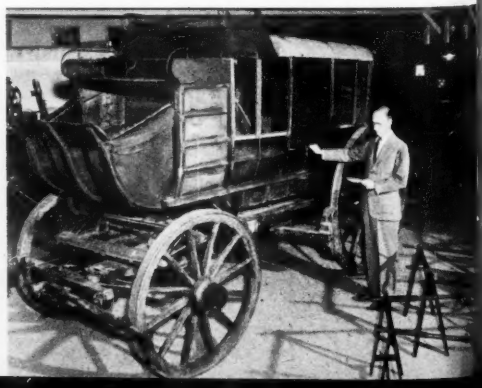
Today, his collection of over 200 carriages is the largest and most comprehensive in the world. He hasn't stopped to figure out its total value but the Concord Stage, priced at $10,000, is an indication of its worth.

And still the carriages roll in. •

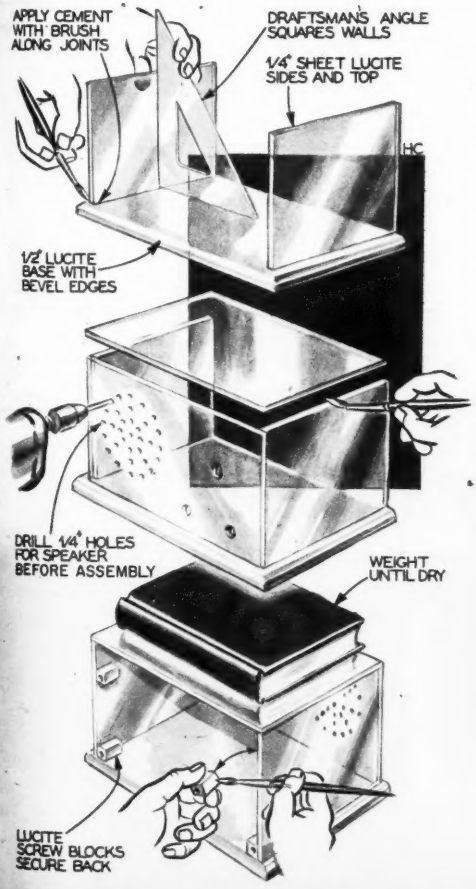
His museum houses over 200 antique carriages. Town celebrates annual colonial festival there.



This coach was one of Wells Fargo's, taken over by Railway Express to supplement rail travel.

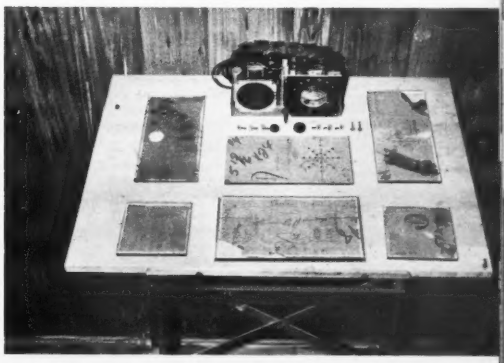


"Crystal" Radio Cabinet



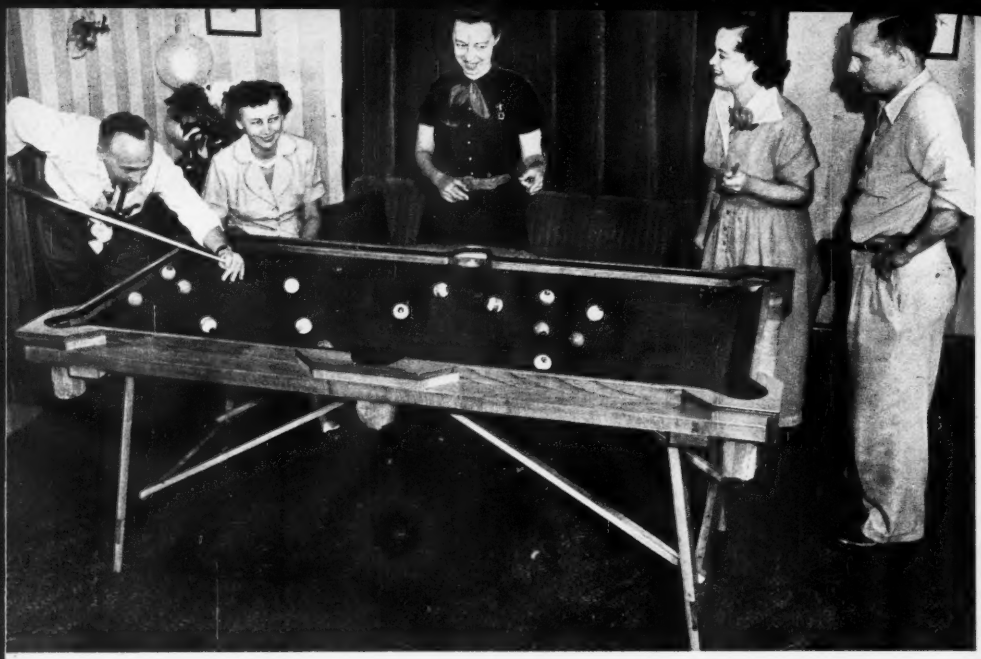
IF the original cabinet of your table model radio is banged up, or you're just tired of its production-line appearance, why not install the chassis in a Lucite cabinet you assemble yourself? Even an ancient set takes on a Museum of Modern Art look when its innards (well dusted, of course) are exposed to view.

Almac Plastics, Inc., at 322 East 23d St., New York 10, N. Y., will supply you with clear plastic sheets, plus enough cement to do the job, for about $7. You can trim the Lucite to your own radio's measurements with a power or hand saw. And who knows? Your "modern" radio may win an award at the next hobby show. •



Protective paper is left on the Lucite while the pieces are cut to size and the holes are drilled.

Photos by William L. Parker



Build This Pocket Billiards Table

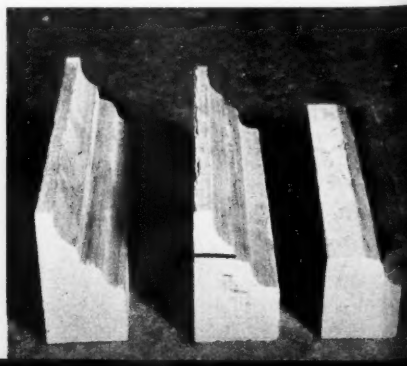
Every member of the family, as well as friends, can share in the pleasure-filled hours that are provided by completion of this project.

By William F. Steuber

A pocket billiards table in your home is a fascinating luxury but you don't have to be wealthy to own one. You can make this billiard table inexpensively out of materials that can be picked up at low cost.

You don't need a spacious home either, because this table is collapsible, portable and light in weight. It is also usable for many other purposes between games. Don't be misled, however, by its dual purpose design and its construction from materials

A protective hardboard cover converts the billiard table into an ideal cutting table for sewing.



Old window headers are trimmed off and air-hose nailed in place to make cushions, as shown here.

CUSHION RAILS (SEE DETAIL)

1/8" MASONITE COVER TOP

1/4" PLYWOOD SIDES (4)

3/4" STOCK STIFFENERS.

GREEN FELT TACKED UNDER RAILS ONLY

5/8" PLYWOOD CORNER AND SIDE POCKET CAPS

STURDY CLOTH POCKETS (6)

32"

1 1/2" HINGES (4)

1" X 2" BRACES (4)

1" X 4" CLEAT (2)

REMOVABLE HINGE PINS FOR FOLDING LEGS (4)

1/2" X 1" STRIP LOCKS LEGS WHEN FOLDED

1" X 4" LEGS (4)

1" X 4" CLEAT IS HALF LAP ON LEGS (2)

HC

BRACE

LEG

METHOD OF FOLDING

RAIL

CUSHION

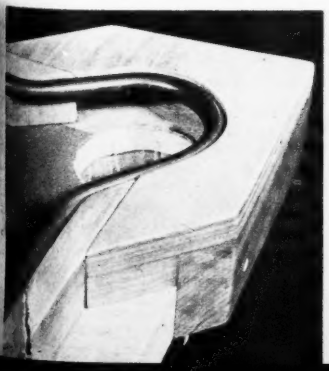
3/4" BRAD EVERY 1"

1/4" MIN.

5/16"

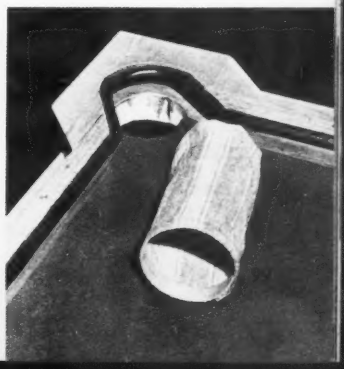
1 7/8"

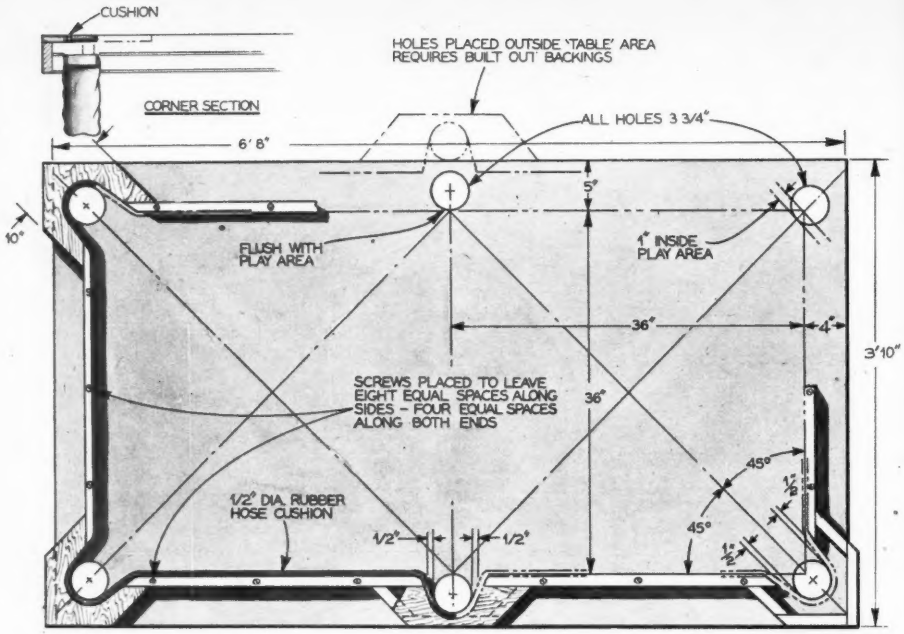
Photo below shows construction of pocket backing. Note how cushion rubber runs from rails to backing.



Side pocket details showing how backing block is built up to rail height. This is done at all pockets.

Cloth pockets are sewn to same diameter as hole. Pocket is held open and snug by a veneer hoop.





manufactured for other purposes, for this billiard table is accurate and true to the most intricate requirements of cloth, cushions and structural rigidity demanded by expert players.

A full-sized slate-bedded regulation billiard table requires a playing room at least 14x19-ft. For home billiards, the first requirement is a table size that will fit into a small room and still allow ample cue space around the table. A second requirement is the elimination of weight. A flush door is the answer to both.

Flush doors can be obtained from most lumber yards or millwork suppliers and in the larger cities are sometimes offered at a far lower price than a sheet of ¾-in. second grade plywood. Flat, true, rigid, light in weight and dimensionally stable, such a door will provide the perfect bed for your pocket billiards table.

Now for the construction details. The sketches show the layout of pockets and angles of approaches to the pockets, as well as the proper relationship between bed, rails, cushions and balls. Study the sketches and photos thoroughly before attempting to start construction.

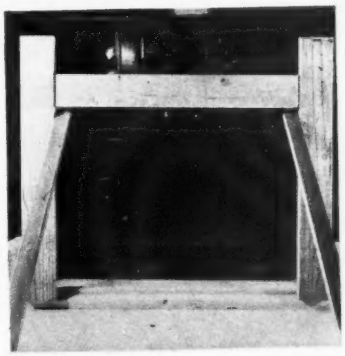
If pocket positions are to lie outside the limits of the flush door, a smaller sized door can be used and there is no need to cut into its surface in order to place the pockets, but this method will require careful and accurate attachment of a considerable number of pieces to the edges of the door. However, this method is also shown in the plan view drawing in case you want to tackle it.

If pocket positions are to fall within the surface area of the door, its size must be chosen large enough so that the holes you cut for the pockets will leave about an inch of material at the door edge. Flush doors have solid wood only at their edges and if its continuity is broken, the rigidity and strength of the door is destroyed. Pocket holes can be safely cut, however, without loss of strength provided that the full hole lies inside the surface area of the door.

In cutting the pocket holes, the usual hole-cutting tools and devices are not satisfactory for there is nothing solid between the door faces—once the faces are pierced—for the center pin of the bit to bite into. Best method is to lay out the pocket hole circumference with a compass and then drill a series of small-diameter holes along the circumference completely through the thickness of the door. Thread the blade of a scroll or coping saw through one of these holes and carefully saw from hole to hole until the piece drops out. Rasp and sand the edges, being careful not to sliver the veneers of the thin plywood, until the pocket hole is true and smooth.

At this stage of [*Continued on page* 138]

Portability of billiard table is evident in this photo showing the legs being folded in place preparatory to storing. Removable-pin hinges are used.



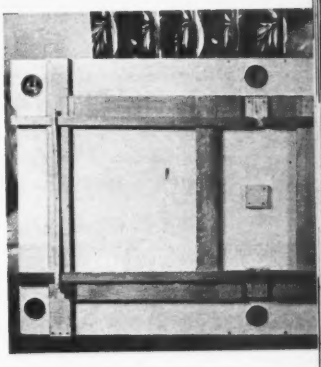
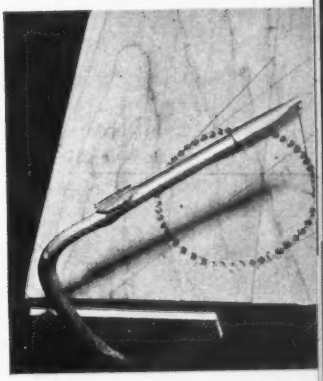
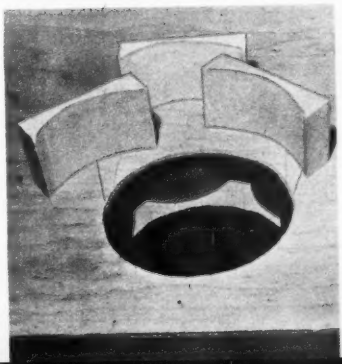
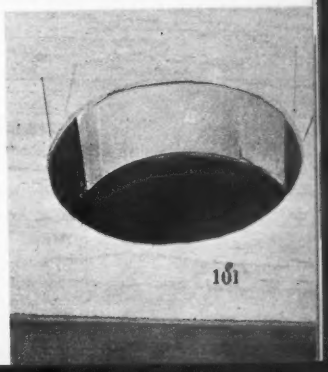


Table upside down to show leg and brace construction and method of attachment to flush door. Underside view shows legs and braces in collapsed position and held firmly to assembly by retention strips.



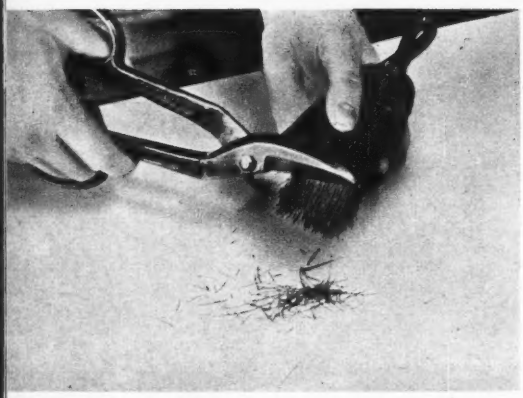
After being outlined by a compass, pocket holes are started by drilling series of small holes and then finished off with a coping saw. Care must be taken not to sliver plywood later when sanding smooth.





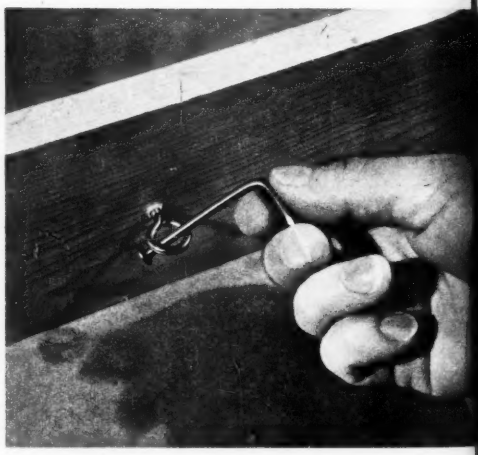
Solid wood blocks, shaped to curvature of pocket holes, are glued in place between the thin plywood door surfaces as protection for edges against slivering by billiard balls during stress of hard, fast play.

Home Hints



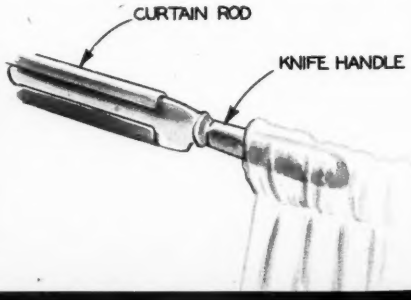
Old whiskbrooms with worn bristles can be saved for more service by cutting bristles square, as shown. When the brush gets too short it can still be used around the shop for brushing chips from benches and machines.

The easiest way to drive small and average-sized screw eyes is to make a crank by bending a long nail. This provides leverage to drive most sizes but in the case of large screw eyes place screwdriver shank in eye.



The end of a round wooden toothpick set in a small hole drilled in the handle of a typewriter cleaning brush will enable you to easily and quickly remove stubborn bits of lint and dirt without scratching type.

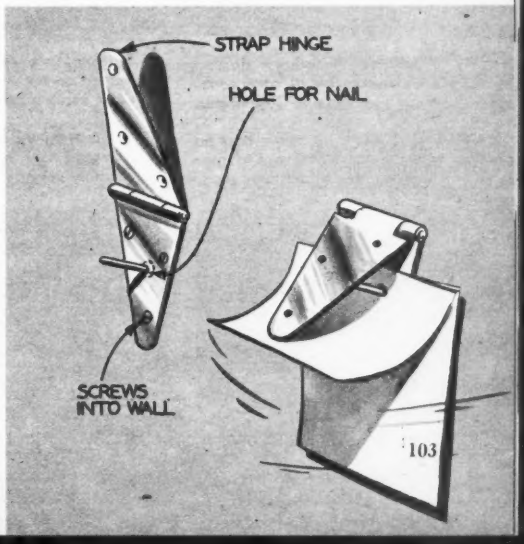
Curtains are easily placed on a rod, without danger of snagging the hem, by inserting the blade of a table knife into the end of rod. The curtain hem is then passed over handle and led onto curtain rod.



Lamb's wool buffer, of the kind intended for use with a rotary power tool, is perfect for polishing cars because of its large fluffy surface. Pull and tie draw strings so buffer fits snug over the hand.

A serviceable roller for applying wallpaper can be quickly and inexpensively made by simply fitting an ordinary furniture caster into a short length of broomstick or tool handle. Wide casters are best.

An ordinary metal hinge with a nail fitted through the lower section makes an ideal spindle to handily file order tickets, bills, etc. Attach hinge to wall with screws so upper section falls over nail for safety.



Old razor blades, the edges of which have been thoroughly dulled by light filing and stoning, make handy erasing shields. Blade is placed over typing so that errors can be erased through blade's open areas.

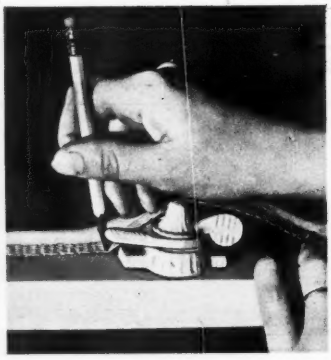
your house

The best insulation and most efficient heating plant can't keep your home warm if wintry drafts get under doors and windows to chill floors, walls and YOU.

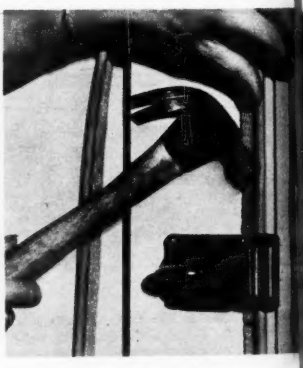
By E. C. Clark, Jr.

Left: Weather-stripping a door takes but 15 minutes, requires only a scissors and a hammer.

1. Seal-type weather stripping is fitted on inside of lower sash, and on outside of the upper.



2. Sealing around lock is tacked on top of lower sash to close seam where sashes meet.

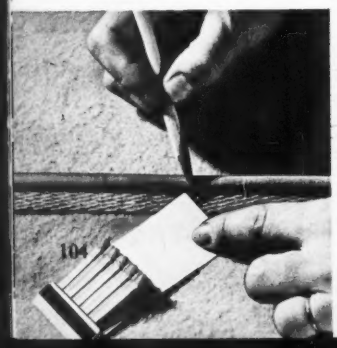


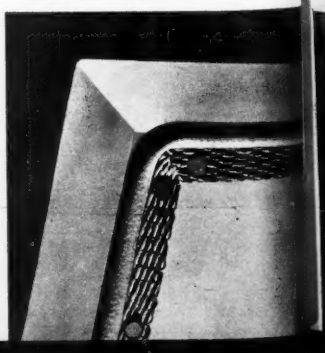
3. Doors are sealed with strip running on inside of door along all edges and past the lock.

4. A match box cover can be used to mark mitered corner cut-outs in attaching strip.

5. Corners are cut out of tacking strip with scissors. Do not cut the sponge rubber bead.

6. Completed corner presents a neat appearance. Place tacks close up along mitered edges.





Weather-Stripping Pays Off

FEW people fully appreciate the importance of good weather stripping but it is a fact that effective weather-stripping of doors and windows substantially reduces heat loss, often by as much as 25 per cent, with a corresponding gain in comfort. An unstripped window can admit 1,000 cubic feet of icy winter air in a single night. Even a ⅛-in. crack along one side of a door totals 10 square inches—a hole big enough to put your fist through.

It's easy enough to determine whether your house needs weather stripping. If you feel a draft, if windows rattle, if curtains flutter or if your house is just plain hard to heat you can be certain you need a weather-stripping job.

Weather-stripping is not a difficult job. An entire house can be done in a weekend and the only tools needed are a scissors and hammer plus some good weather stripping material and some hand work.

There are many types of weather stripping material, some good and some not so good. Metal types are, for the most part, excellent but usually require professional installation for best results.

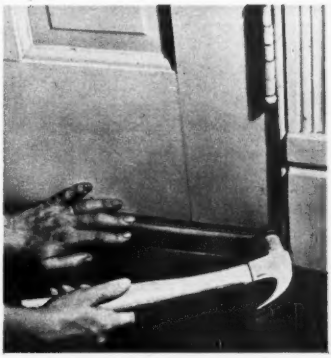
Felt weather stripping, either in flexible strip form or in rigid lengths with wood or metal stiffeners, can be applied by the home owner at low original cost. Principal drawbacks of felt are that it absorbs moisture, mats down, becomes ragged and needs periodic replacement at added cost.

A new seal-type material is easily installed by anyone. It has a spring wire skeleton encased in sponge rubber which has a coat of tough Neoprene. The photos show this material being applied in several different ways. •

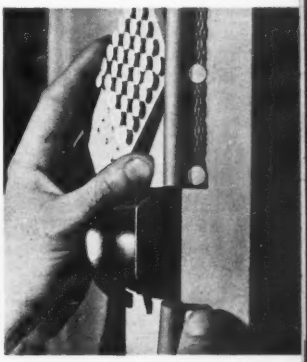
(Turn page for more pictures)

Photos Courtesy Bridgeport Fabrics, Inc.

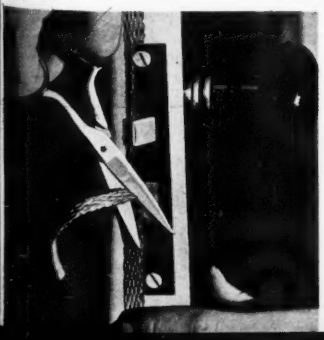
7. Mitered moulding is not necessary but does give finished job a professional look.



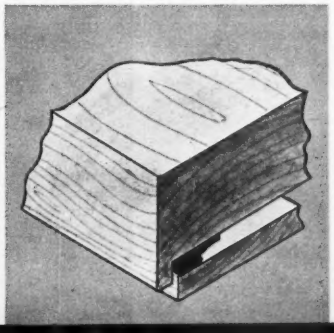
8. At door sill, bend tacking strip inward or outward to make firm all-over contact.



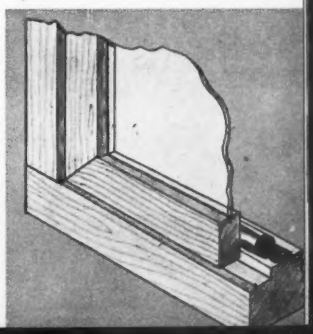
9. If door has wide clearance, sealing can be placed on edge to help conceal tacking strip.



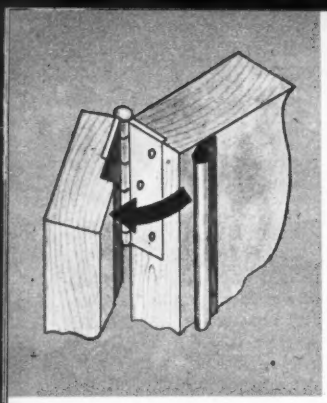
10. Trim the tacking strip with scissors to fit in snugly around conventional locks, as shown.



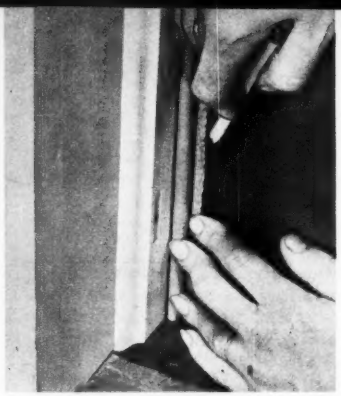
11. Weather-stripping of compression joints in trap doors makes them fully watertight.



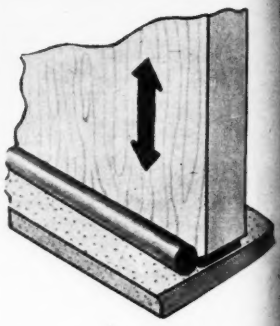
12. Sealing is tacked to permanent frames of storm windows so screens can also be used.



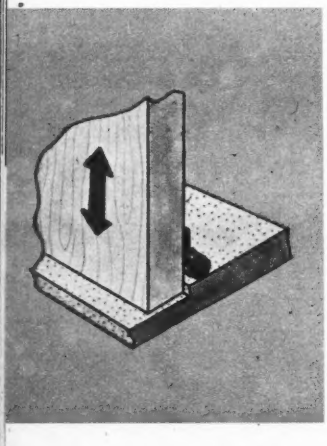
13. At hinge side of doors, sealing is applied on outside of door, not to the frame.



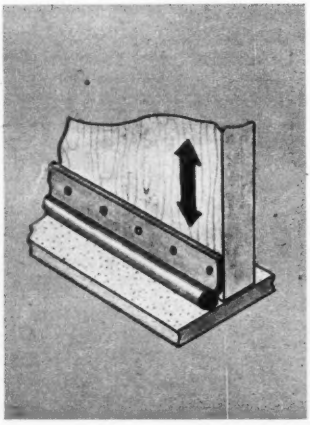
14. Mark outside of door with stripping in place before tacking. Tack with door open.



15. Inside application to door is best where heavy ice and sleet are likely to prevail.



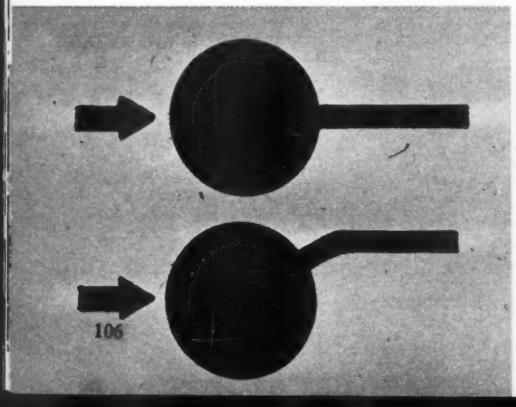
16. Outside application does the job best when inner surface of door is metal covered.



17. Underneath application, when practicable, provides a quiet and cushioning effect.

18. Always preadjust sealing by bending the tacking strip to desired angle with your fingers.

19. Sealing should always be mounted at an angle, never straight-on. Profile views, below, show the correct and incorrect way to apply material.

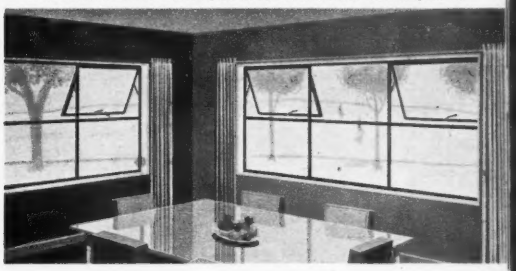


20. The infallible test of the finished job is to hold a lighted cigarette before doors and windows to test the sealing for any drafts still present.

New Products for your house

★ For more details about products on this page, write: Dept. K MECHANIX ILLUSTRATED, 67 West 44 St., New York 36, N. Y.

Designed for interior use, glass doors are easy to keep clean and give any room a new, modern look. Made of 3/8-in. Muralex glass by Libbey-Owens-Ford Glass Co., at Toledo, Ohio, plant.

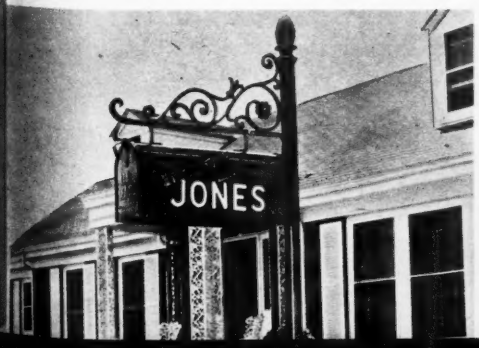


New welded steel window frames provide maximum visibility and ventilation and can be fitted with either regular or insulated glass. Available from Truscon Steel Co. of Youngstown, Ohio.

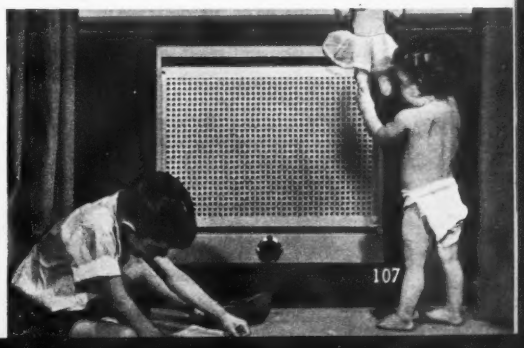
Developed to spur sales to craftsmen and others, new small sizes of Douglas Fir Plywood panels can be carried home under the arm. Panels are labeled with grade, type and dealer's price.

Skids keep the heat a safe distance from the painted surface, while metal reflectors keep the plastic handle cool in a new electric paint remover device developed by General Electric Co.

Grace, charm and permanent durability are featured in a new ornamental iron mail box stand. Made by Tennessee Fabricating Co. in Memphis, the stand complies with U. S. Postal Regulations.



Accidental contact with this shatterproof ceramic radiant heater causes no burns, making it ideal for use in homes with children. Unit is produced in three models by Heatmore, Inc. of N. Y. City.



A Father and Son Project

For the Birds

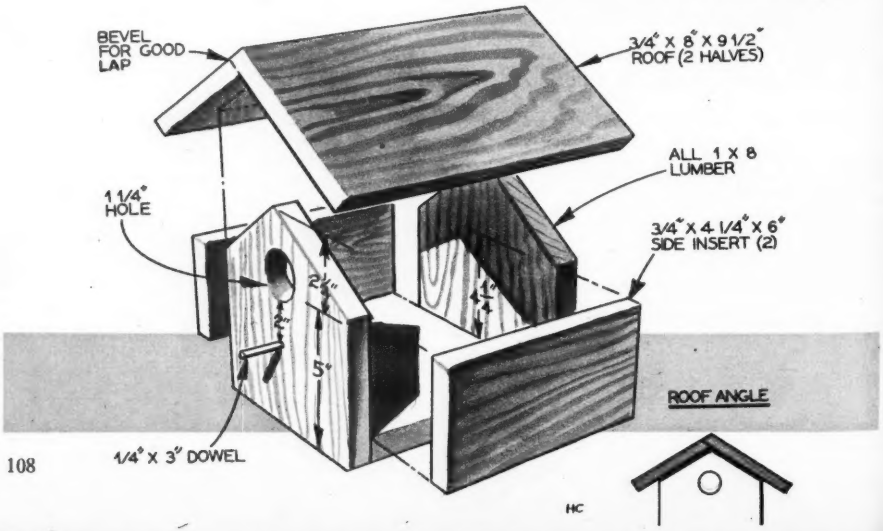
From start to finish, share the project with your boy, right up to hanging the birdhouse. Family got a big bang when pair of wrens moved in.

IF you've ever hoped to share your building fun with your youngsters, start with this project. It's a job suited to the abilities of even a six-year old lad.

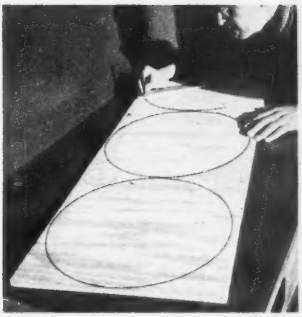
Construction details for the birdhouse are shown in the drawing. You'll need about four ft. of 1x8 in. stock. Begin the project by discussing the job first with your boy. Depending on your son's age, you may have to start the saw cuts and even complete many of them yourself, but give him a chance to do some of the sawing.

When you begin to nail the birdhouse together, let him help you—even if you have to start and in some cases straighten the nails he hammers. When the house is complete give your boy the job of painting it. But, put down plenty of newspapers to protect the floor.—*Bill Cartwright* •

Simple nailing is just about right for young hands. You may have to do a little nail-starting and what's more likely, some nail-straightening.



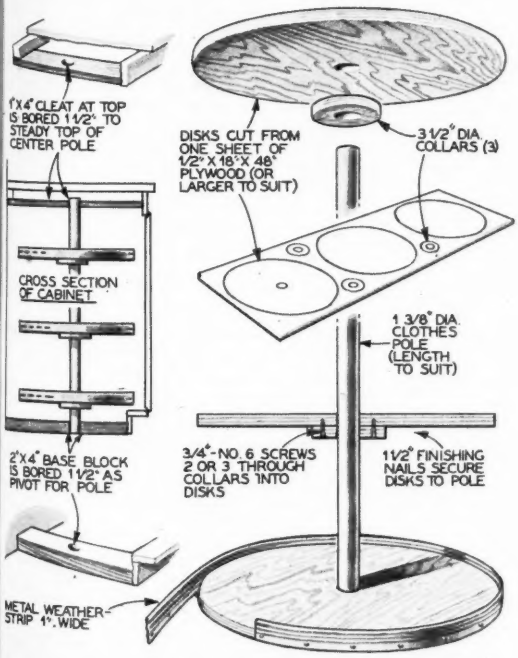
Metal weatherstripping serves as a fence to keep objects from sliding off when the housewife twirls these novel storage shelves.



Clothesline and pencil are used as a compass to outline circular shelves on the plywood stock.

Revolving Storage Shelves

Merry-go-round shelving will eliminate the nuisance of straining to reach items that are now stored at the back of the closet.



THE revolving shelves pictured above cost but $2 and are easy to make. You can get the material from any lumber yard. These shelves were made from an 18x48-in. sheet of scrap plywood that cost me 80 cents. They were mounted on a 36-in. length of 1⅜-in. clothes closet rod priced at 12 cents per foot.

Metal weatherstripping makes a fence for the shelves. Tools for the job are familiar ones usually found in any handyman's kit—hammer, saw, coping saw, tin snips, brace with expansion bit and a hand drill.

The size of your shelves will be dictated by dimensions of the cabinet or closet in which they'll be placed. Make the shelves two inches smaller than the diameter of the spot they will occupy. This allows a one-inch clearance.—*Jerry Parker* •

Recipe for a pleasant evening: a comfortable easy chair and your favorite magazines within arm's reach in the compartments of this caster-mounted rack.

Colonial Magazine Rack

Rivaling commercially manufactured racks in beauty, design and utility this distinctive weekend project is low in cost and can be built even by a novice.

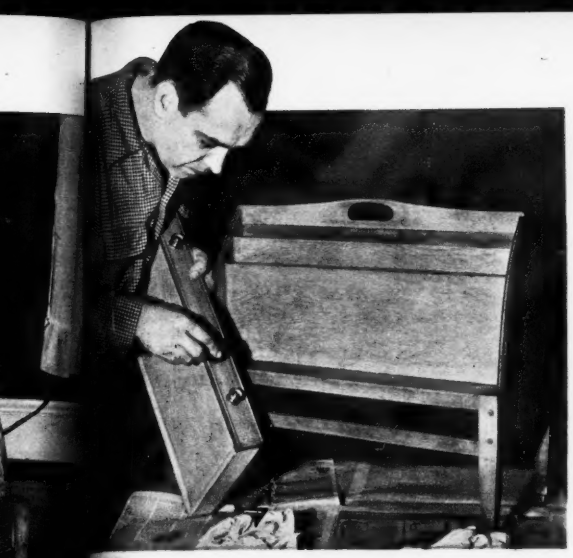
By Harold D. Mack, Jr.

THIS plywood magazine rack has several distinct advantages. Its handsome pine finish will set off any den or playroom, pine plywood for construction is readily obtainable and the height of the rack is perfect for picking out a magazine at seat level. There is also a spacious drawer to hold old magazines, pencils, paper and other items.

Now for the construction details. A weekend is sufficient to do the job if you can manage to work about ten hours and the total cost of the project should not exceed ten dollars, including hardware items. So—go out and buy a small amount of 1¼-in. pine stock for the legs and a 4x8-ft. section of 3-ply, ¼-in. white pine plywood and get started. Follow the drawing details and you will have no trouble.

First, lay out the end pieces. Glue up two pieces for each end and when dry, band or jig saw the curves as shown in sketch. If a router or shaper is available, run ⅛-in. beads on both sides for better appearance but this is not absolutely necessary as it will prove attractive after staining in any case.

Now, cut the legs and plane the taper on all four sides so that the brass caster sockets fit snugly. On the drawer side, cut two stretchers 1x21-in. and dowel them with ⅜-in. dowels [*Continued on page* 140]

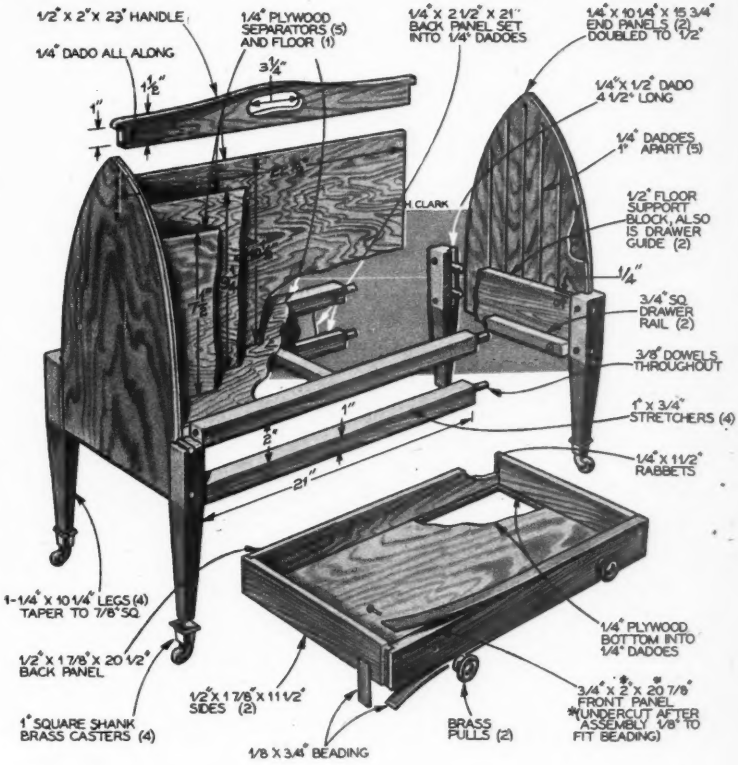


The drawer is assembled last and the beading is not tacked and glued in place until it has been trimmed, rounded over and completely sanded.

The utility and sturdiness of construction can be appreciated from this front view which shows the large drawer and ample magazine storage space.

MATERIALS NEEDED

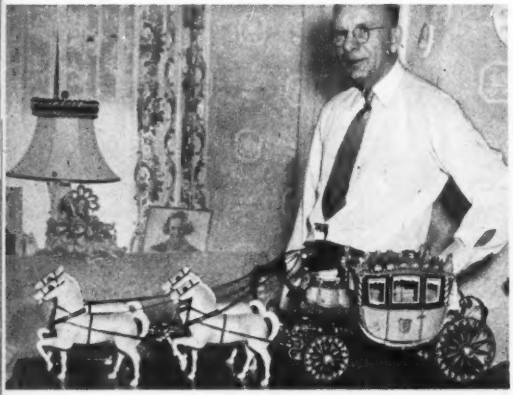
End panels: 4 pieces, 1/4" x 10 1/4" x 15 3/4"
Separator panels:
2 pieces, 1/4" x 7 1/2" x 22 1/2"
2 pieces, 1/4" x 9 1/4" x 22 1/2"
Center separator panel: 1/4" x 10 1/2" x 22 1/2"
Legs: 4 pieces, 1 1/4" x 1 1/4" x 10 1/4"
Stretchers: 4 pieces, 3/4" x 1" x 21"
Back panel: 1 piece, 1/4" x 2 1/2" x 21 1/2"
Handle support: 1 piece, 1/2" x 2" x 23"
Bottom: set in two pieces, cut to fit snug
Drawer: front, 3/4" x 2" x 20 7/8"
sides, 1/2" x 1 7/8" x 11 1/2"
back, 1/2" x 1 7/8" x 20 1/2"
bottom, 1/4" plywood set in dadoes in sides, front and back
Miscellaneous: 3/4" x 1 1/2" dowels throughout
Brass pulls, 2 pieces of 1" diameter
Casters, 4 brass, 1" square shank



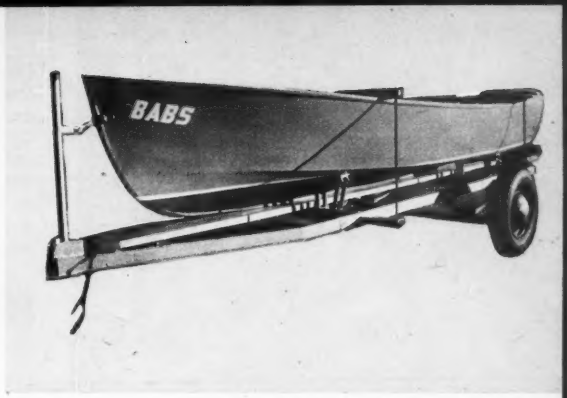
MI WORKBENCH AWARD WINNERS

Pygmy plane is like the kiwi bird in that it can't fly, but it makes a swell pushmobile for Mark and Terry Stevens. It was built around a surplus fuel tank by Wm. Stevens of Wheeling, Ill. Photo taken with Speed Graphic.

Lilliputian coach-and-four took John Debski, a development machinist at Sylvania Electric Products, Inc., the staggering total of 43,924 hours to construct. It is an exact miniature of the one given to Napoleon when he married Maria Louisa.



Radio-phono cabinet was made from veneer panels and reclaimed oak by the Rev. Mr. John A. Jacobs of Ponca, Neb. It was finished with four coats of varnish, hand-rubbed to a high gloss. Walnut cross atop cabinet is another Jacobs project.



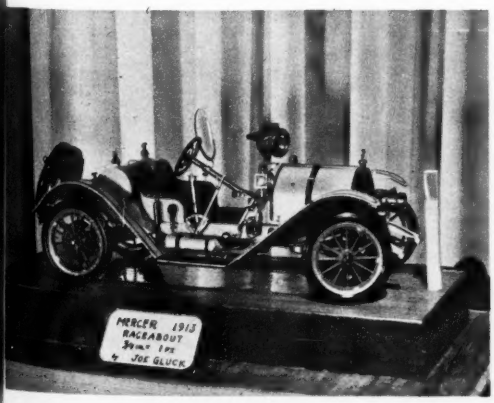
Trailer, built by B. T. and Dale Smith of Lubbock, Tex., has a gas-pipe axle, springs from a '34 Dodge, an angle-bar frame, fenders from a pickup, plywood sides, and a sheet-aluminum top. Interior fittings include stove, icebox, bed, and storage space.

Outboard utility boat, 15 ft. 3 in. long, was constructed by James J. Race of Salem, Ore., from MI Plan No. B-183. Materials, including oars, life jackets, and hardware, cost $275. Mr. Race writes, "With my 12-hp motor, speed is close to terrific."

Each craftsman whose project is shown here receives a $5 check and a Workbench Award Certificate. How about sending us a photo and description of your latest project? If you aren't a winner, you may still receive a Certificate Of Merit. Photographs of your workshop are also eligible for an award. Send entries to MECHANIX ILLUSTRATED Workbench Awards, 67 West 44th Street, New York 36, New York.

Midget Mercer 1913 Raceabout was made by Joseph P. Gluck, a Los Angeles film cutter, while convalescing from an illness. All body parts are accurately formed from heavy sheet brass and the lights are powered by flashlight cells.

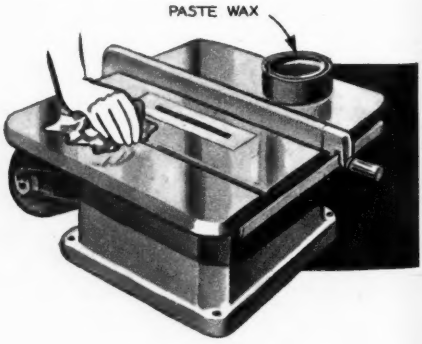
Modern desk, designed and built by Joseph L. McKinstray of Bakersfield, Calif., has legs and framing of solid birch, top and drawer fronts of ¾-in. birch veneer, and sides of ¼-in. birch veneer. The varnish finish was carefully rubbed and waxed.



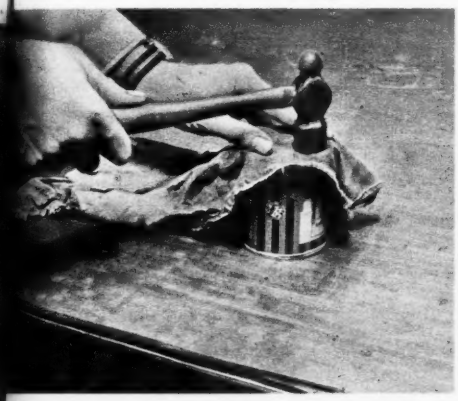
Quick soldering pot can be fashioned from a 100-watt iron. The brass cap from an old lamp socket holds the solder. If the threaded bushing is drilled out, you can get a press fit over the end of a ⅜-in. iron tip. Hold iron upright, with handle in a vise, and slowly feed solder into the cap. Skim off dross, then simply dip wires into the "pot" for electrically perfect joints.

There's no excuse for dull tools when your oilstone is stored in a convenient container fastened to the underside of your workbench, as shown above. When not in use, stone is slipped back into its recess.

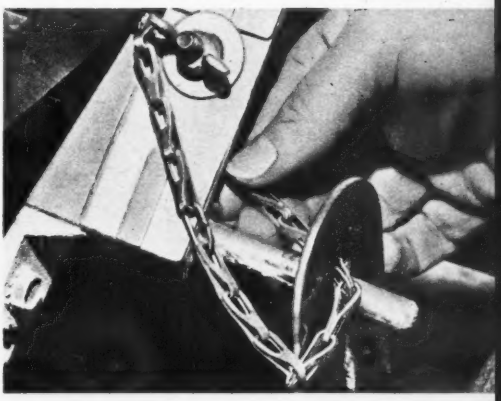
Infrequent use of circular or band saws sometimes means rusty tables, which are likely to mar fine woods. Also, they tend to stall the miter gauge. Keep tables in shape by applying a coat of paste wax, then buff.



SHOP KINKS

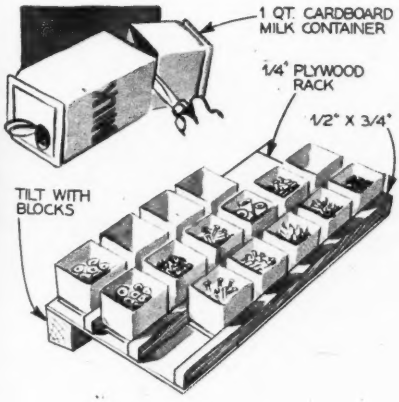


Paint splattering over the workbench or your hands when closing a well-filled can is easily averted by placing an old rag over the can and then hammering the cover shut, as shown above. Don't snare rag in can.

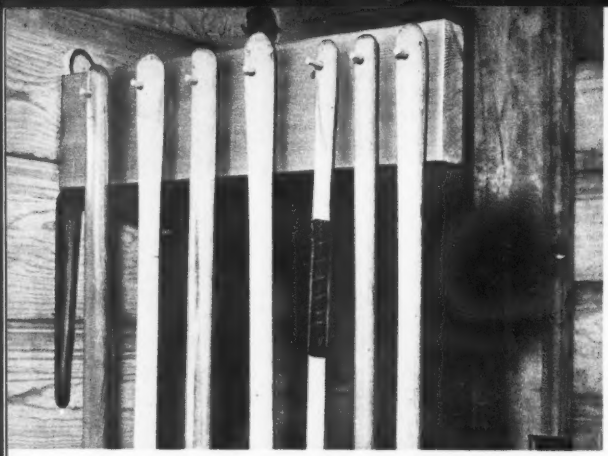


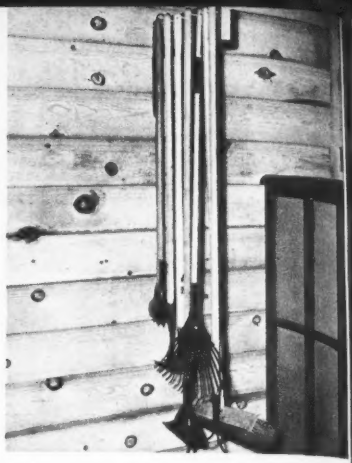
A short length of chain looped between the motor on a circular or other power tool and the tool frame will eliminate danger of motor falling should the leather connecting-belt break while motor is in use.

Ordinary waxed milk cartons can be cut in half to make an inexpensive and handy place to keep nails, etc. Cartons take less space than glass jars and remove the hazard of broken glass cutting hands.



Small paint brushes used for striping, lettering, etc., can be suspended in a solvent or cleaner by using a coffee can with several small alligator clips soldered around the rim. For big brushes use big clips.

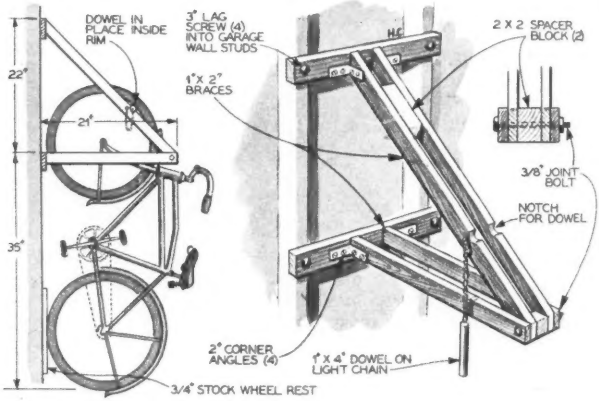




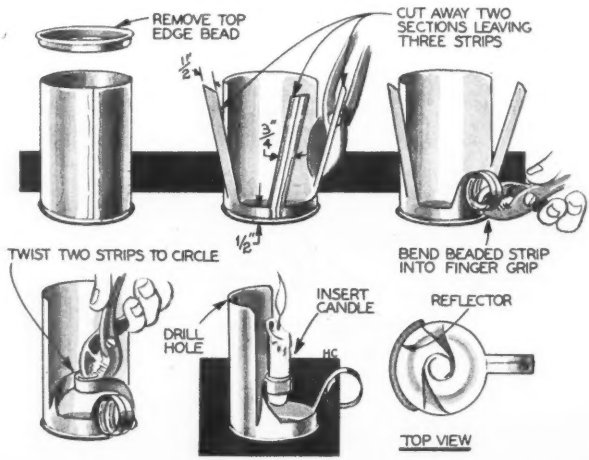
Garden Tool Rack. Ever get a clunk on the head by stepping on a rake? Prevent such calamities by making this handy rack. It consists of a 2x6 (or 2x4) fastened to the garage wall with a shelf bracket. Dowels hold tools.

Evening Projects

Space Saver. Another shin-saving idea is this bicycle rack. Follow the drawing for construction details. Note that the bike is kept from falling out of the rack by the dowel which is passed under the front wheel.

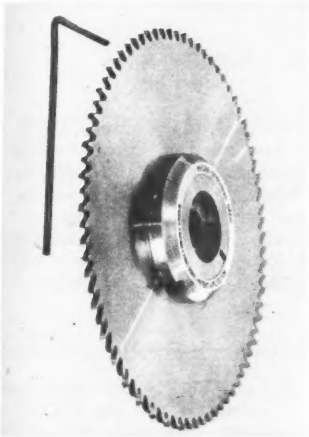


Tin Can Candlestick. A pair of tin snips and a can will enable you to make a rather novel candlestick holder for camping or emergency use. All the parts, handle, reflector, and base are made of the same can.



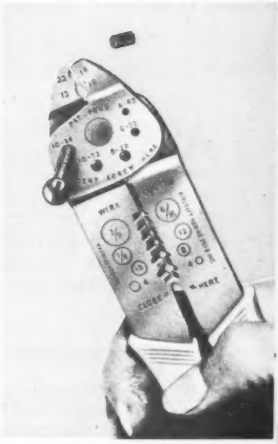
NEW for the SHOP

Combination power tool made by Stanley Electric Tool Co. of New Britain, Conn., contains saw, grinder, jointer and sander. Has built-in key switch; uses ⅓ hp motor.



One piece geared dado head cuts up to 2 in. Made by Magna Engineering Co. of Menlo Park, Calif.

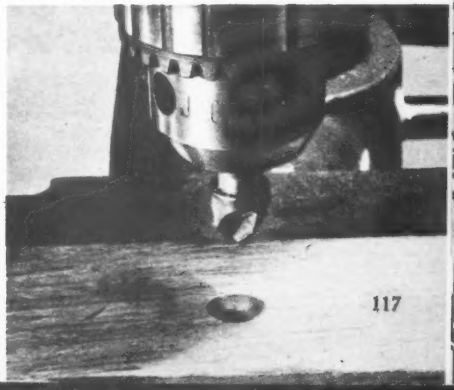
Six piece matching set of magnetized screwdrivers made by Terry Products of Merrick, N. Y.



Handy Dutchman crimps cuts, strips and shears up to 10x24 bolts. Aircraft-Marine, Inc., Harrisburg, Pa.

New portable electric finishing sander made by Black & Decker Co. of Towson, Md., has 3⅝x9 in. sanding surface. Tool has orbital action.

Chatterless line of countersinks for wood and metal for use in drill press or hand electric drills is made by Severance Tool Co. of Saginaw, Mich.



Modern Table Desk

Simple in construction but attractive enough to grace any home, this useful piece can be built with ordinary tools at a total cost of about eleven dollars and some spare time.

By Shep Shepherd

AT last! A modern table-desk designed to accommodate all those out-sized scrapbooks, photo albums, and other items too large for average size desk drawers.

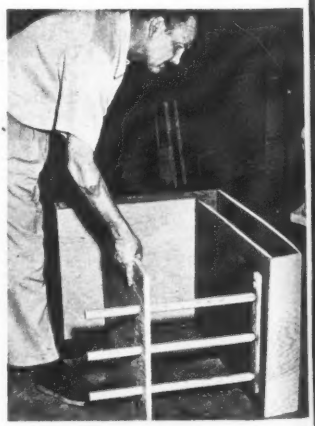
Handsome and sturdy, this artistic piece is built from a single sheet of ¾-in. plywood plus a few strips of molding and doweling. This particular project was made with fir wood at a cost of only $10.95.

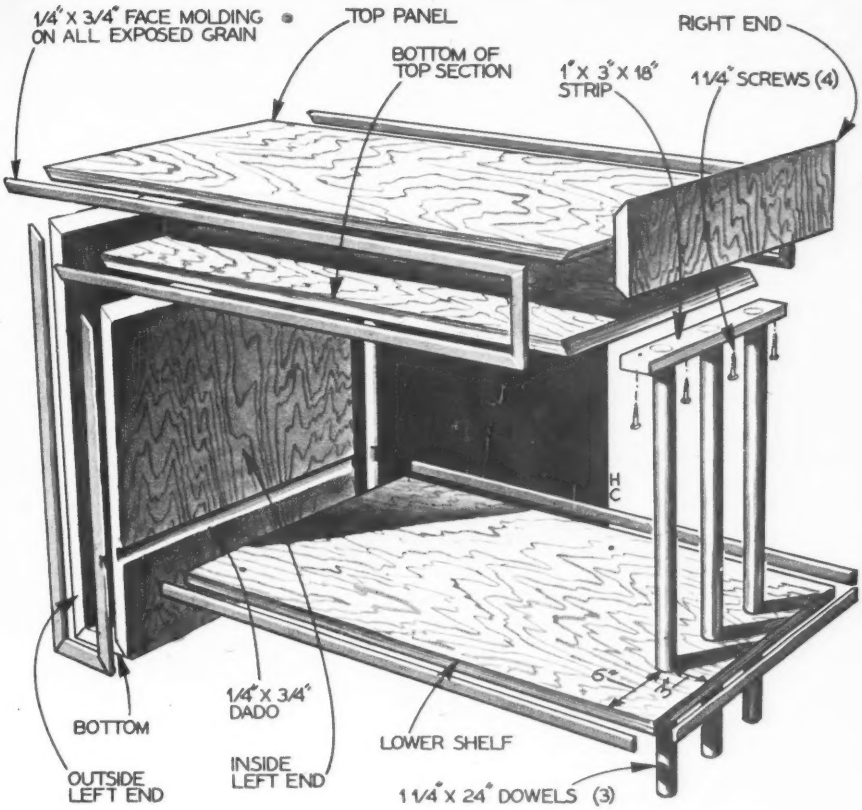
Here is all you need to construct this useful and decorative piece of furniture: one sheet of ¾-in. plywood 4x8-ft. in size, 30 ft. of ¾-in. flat molding and six feet of 1¼-in. dowel. The molding should be purchased in four 8-ft. strips. This will eliminate the need for patching strips. •

Smart lines and ample storage space for large albums and books are features of this table-desk.

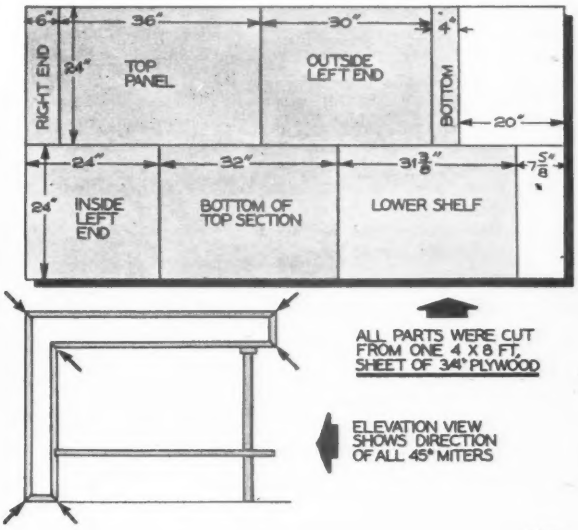
Scrap wood serves as a buffer when hammering the three dowel legs through lower shelf from top.

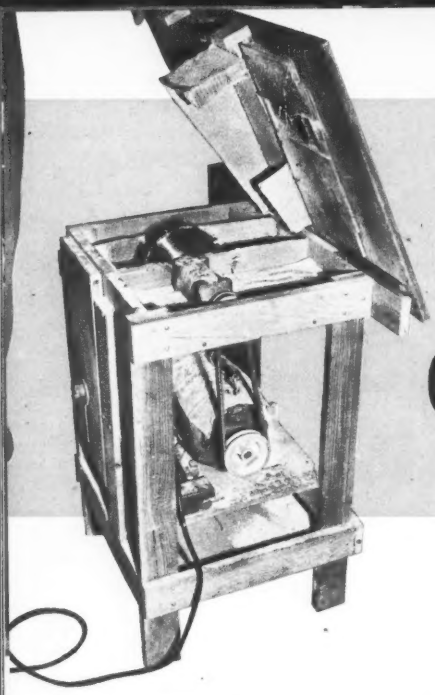
Lower shelf fits into dado in left side panel and legs are held in place with glue and screws.





Use nail punch to sink nail heads below table surface and fill holes with wood putty. Finish as desired.





How to Build Your Own CIRCULAR SAW

The hinged table top regulates the depth of cut when sawing and makes it easy to empty the plain cardboard box that serves as a sawdust pan.

A POWERED circular saw is almost a "must" for any craftsman, hobbyist or home owner. Yet, because it is a bit expensive, most woodworkers do not own one. This article describes exactly how such a saw can be built for less than $12, except for the cost of the electric motor required. Furthermore, it is very easy to build and ordinary home tools can be used in its construction. It is portable, sturdy, has a large table top and is adjustable for depth of cut. With little extra effort the saw can also be made practically sawdust proof, as an aid toward keeping one's work place clean. It can also be fitted for a miter gauge.

Ordinary 1x3 in. pine is used for the construction of the frame proper. Viewed from the operator's position (according to the sketch), the front and back frames are built first. Cut the four legs and the four horizontal cleats to the correct sizes. Then drill clearance holes for wood screws in the horizontal pieces.

Assemble the frames, using clamps, and drill the starting holes for the screws into the vertical legs. Mark each board now so that the frames can be reassembled properly after glue has been applied at each joint. Be careful to keep the frames as square as possible while roundhead screws are being driven home.

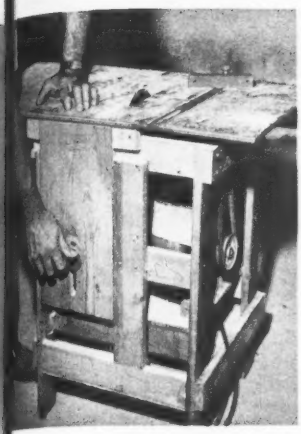
The next step is to prepare the four horizontal left and right side frame connecting boards by cutting them to size and drilling screw clearance holes. Glue is applied at the joints and the connecting boards are attached to the front and back frames, using clamps. This is a good time to square up the entire assembly after which the screw starting holes are drilled concentric with the clearance holes and the screws driven in place.

While the glue is drying, 1x8 in. pine board is used to prepare the motor and mandrel mounting bases and the adjusting board. The bases are glued and screwed in place (as per sketch) after the vertical and horizontal adjusting board guides have been made ready.

Now is the best time to mount the saw mandrel and to drill the holes for mounting the motor. Use a mandrel of the type illustrated which can be purchased from any mail order house. Its housing is of one-piece cast metal (containing two ball bearings and shaft), a desirable feature since the mandrel is to be mounted on soft wood and this type of construction will insure proper shaft alignment.

Cut four ½ in. slotted holes for mounting the mandrel. Set the electric motor in its approximate correct position and after having mounted the desired sheaves on the mandrel and motor, measure the V-belt length required. Get the belt and mount it in position. Then mark off the holes for the motor. Slot these holes about 1½ to 2 in. long so that the V-belt can be tensioned [*Continued on page* 140]

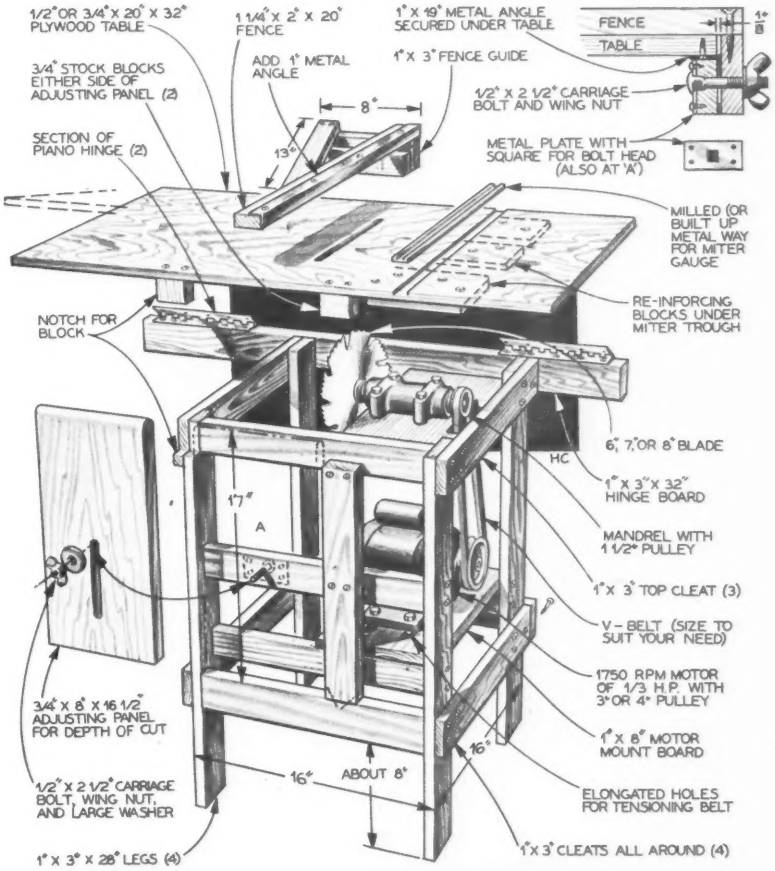
By Sidney V. Worth

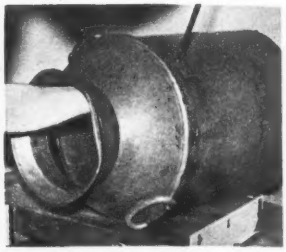


Adjusting board moves up or down against table top and is locked in position by means of wing nut. Waxed board-guides insure smooth, efficient operation.

Milled (or built-up) metal way in the table top makes the addition of a miter gauge possible and expands the scope of work that can be undertaken by operator.

Work can be held in proper alignment by means of a movable fence which has a guide that slides along and below table top on operator's side. See drawing below.





Left: Loading the mixer. Measure the sand, gravel and cement with a small bucket to assure right proportion. Photo above shows how mixing blades are installed.

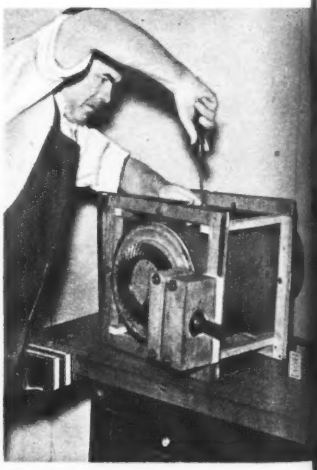
Milk Can Concrete Mixer

The right combination of sand, gravel and cement for making concrete is meaningless—unless they are thoroughly mixed.

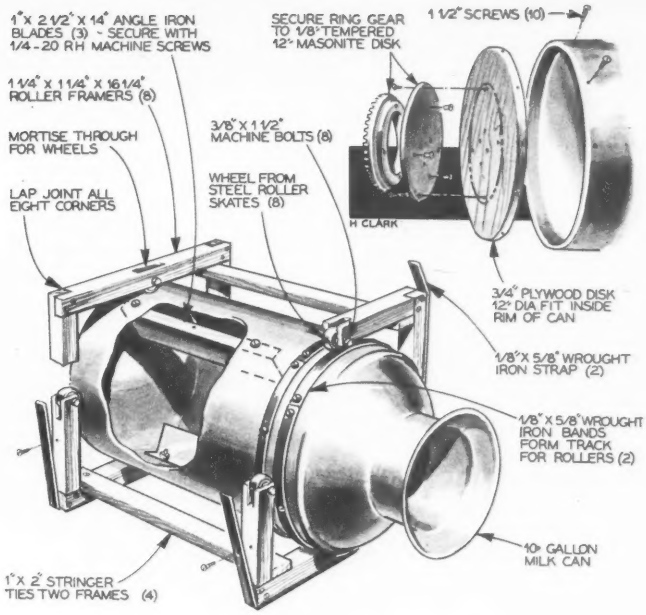
By Clarence A. Martin

The mounted ring gear is fastened to the outside bottom of the milk can.

Two strips of iron around the front end of the can form a track for the forward set of wheels.



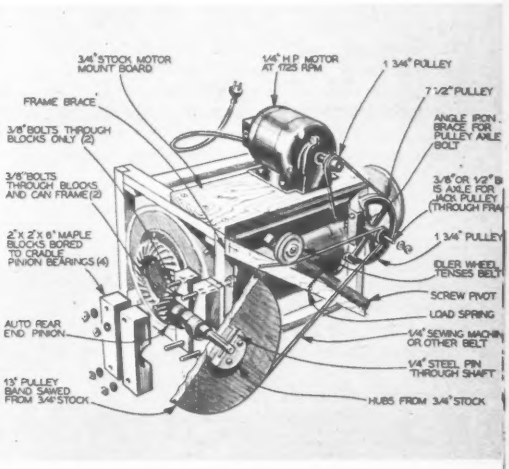
Heavy strap iron, secured with roundhead screws encircles framework of mixer.



ANYONE who has ever mixed any amount of concrete by hand will appreciate a method of doing this back-breaking job by machine. The same holds true to a lesser extent for mixing dry mortar, feed or fertilizer.

Many, however, will hesitate to spend the money needed to buy a power mixer at today's prices. Building one seems to be the most practical solution to the problem. Particularly since most of the parts needed to build a concrete mixer that will be suitable for most home owners' jobs can be obtained at little cost.

The first requirement is a milk can. If this cannot be found, a 10-gallon drum with a cover may be substituted but some of the measurements will have to be altered. Three mixing blades are fastened to the inside of the can, each with roundhead machine screws, lock washers and nuts. As the original [*Continued on page* 141]



Pulley which drives pinion gear is made out of ¾ in. plywood cut to shape on a band saw. Pulley is grooved in center to hold belt in place.

Photo by Robert Brightman

By Frederick C. Russell

car care

Cold Weather Starting

SO the engine won't start? It's cold outside, but not so frigid that you can skate on the ocean. The garage is unheated, but the doors are closed tightly to keep out wintry winds. Many an engine would go into action at the first touch of the starter button, but not so with your wagon. Why must the starting motor groan and groan until the battery goes down for the third time? Is there no way to end this annual Waterloo?

Shortest route to victory is to meet the facts head on. How many motorists, for example, realize that the main reason engines are so reluctant to start in cold weather is because compression is too low? How many realize that the way to raise cranking speed for higher compression is to thin down the engine oil? A friend of mine thinks he has the answer by using a pair of batteries wired in parallel, but he's on dangerous ground. The arrangement gives him faster cranking speed, but his plan damages the engine. Cold and congealed, the oil fails to circulate freely causing cylinder scuffing and valve stem wear.

If this particular motorist would use sufficiently light oil, the car's regular battery would be quite capable of spinning the engine at a normal cranking speed and at the same time there would be a quicker flow of oil to the rings for better sealing and easier starts.

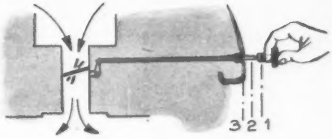
One of the tricks which experts use to capitalize on this matter of oil flow is to switch off the engine right after it starts. They wait a minute, then re-start. The oil, under pressure (even though the engine is dead—watch the oil gauge!), circulates so that when the engine again goes into action there is better compression and less risk of cold motor damage known as scuffing.

Remember that starting a cold engine with congealed oil by towing or pushing

AVOID PUMPING STEADILY ON GAS PEDAL - THIS ONLY FLOODS CARBURETOR THROAT AND INTAKE CHAMBERS ---

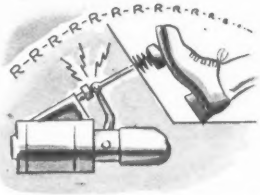
CLEAN AND SET GAPS WHEN DRYING OFF WET PLUGS

-- WETS PLUGS, WHICH WILL NOT FIRE NOW - ALSO WASHES DOWN NEEDED LUBRICATION



MANUAL CHOKE IS VERY HANDY, BUT USE CAREFULLY - WAY OUT FOR START, HALFWAY IN WHEN STARTED, ALL WAY IN WHEN WARMED UP

DISENGAGE CLUTCH BEFORE STARTING - THIS FREES MOTOR FROM JOB OF TURNING MANY TRANSMISSION GEARS



IF ENGINE DOES NOT RESPOND, GET OFF THE STARTER, AND START A CHECK - STARTER ONLY TAKES JUICE FROM IGNITION

OPEN DOOR AND LET SUN SHINE ON EXPOSED ENGINE BEFORE BREAKFAST - CAR WILL START MORE READILY

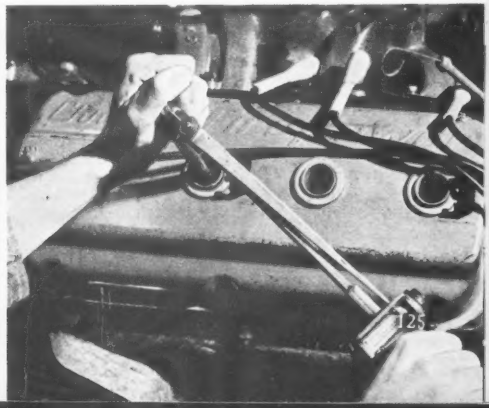
may damage it if you race the motor as soon as it fires. Of course pushing may be needed if the battery is weak, and I'll tell in a moment how best to do this (with automatic drives as well as with conventional transmissions), but right now make sure that the grade of oil selected anticipates the lowest temperature to which the engine will be subjected. Oil such as 10W may not be light enough. It used to be the rule to add kerosene for extremely low temperatures, but the better plan today is to use additives like tune-up and valve oils. These speed oils flow to strategic points and limber up the bearings for easier cold weather starting.

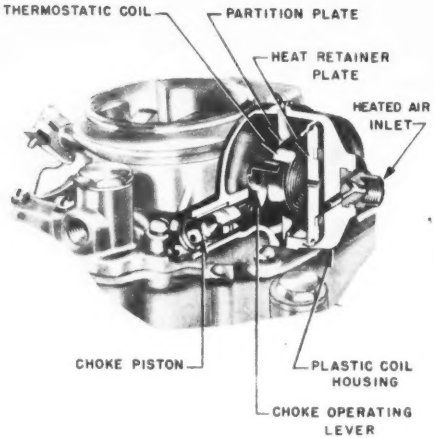
Since it is necessary to safeguard the engine against starting delay by using a light oil for the normally expected cold, I should like to point out that you should watch the oil level carefully in winter, especially if you go on a trip because light oil burns off faster than a heavy oil.

Oils that are fortified with gum solvents have an added advantage. They help check sticky valves. And of course better seating valves mean higher compression. These oils also provide better ring action which is also an important part of the compression picture. Since additives tend to burn off faster than oil they must be replaced if the advantages of faster crank-

A partially charged battery won't make starting any easier. Make sure that fan belt is tight (only one inch of slack) and is driving generator.

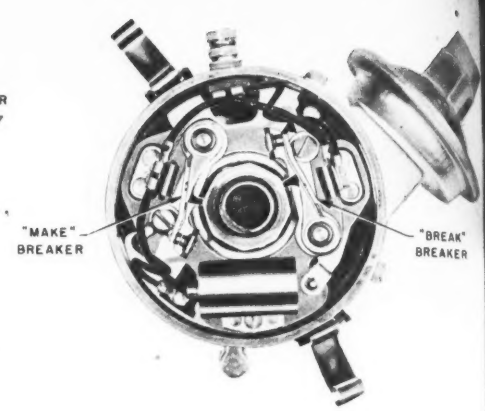
Some new engines do not use compressible spark plug gaskets. To prevent fouling and starting delay, plugs should be tightened with torque wrench.





SECTION VIEW OF INTEGRAL AUTOMATIC CHOKE

You can check the operation of the automatic choke by taking off the air cleaner and looking into throat of carburetor.



DOUBLE-BREAKER IGNITION DISTRIBUTOR

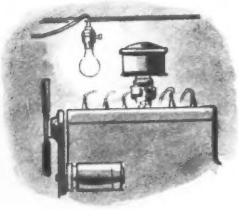
Owners of cars with double breaker ignition points, invite starting trouble unless points are adjusted to factory specifications.

ing at a low temperature are to be retained.

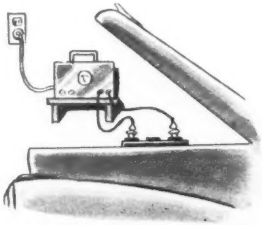
A hot spark is important. One reason an engine often fails to fire when cranking is slow, is because so much current is going into the starting motor there's little left for ignition. That's why a cold engine will sometimes suddenly start when you take your foot off the starter button.

If your car won't start, even though cranking is fairly rapid, check for an odor of gasoline around the carburetor as well as at the exhaust. If it is apparent that fuel is reaching the cylinders, stop cranking and check for moisture on the spark plugs, the coil and the distributor cap. While wiping off these parts with a clean cloth the raw gasoline within the cylinders will leak down past the rings leaving a mixture that is more likely to fire. The pause will also help the battery recover so as to make the starting motor spin the engine faster. In the old days it was that quick pull on the hand crank that provided the compression build-up. Electric starters have never successfully equaled the hand crank in this respect, but with the battery well up to par and light oil, they come close to it.

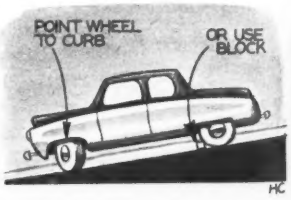
But I am getting ahead of my story. Suppose there is no smell of gasoline. You are then being tipped off to the fact that fuel isn't reaching the cylinders. It usually means that the fuel pump is weak. A pause here is the proper step, for the battery will refill the carburetor best when the engine cranks fastest. Try another few seconds of cranking and if [*Continued on page* 139]



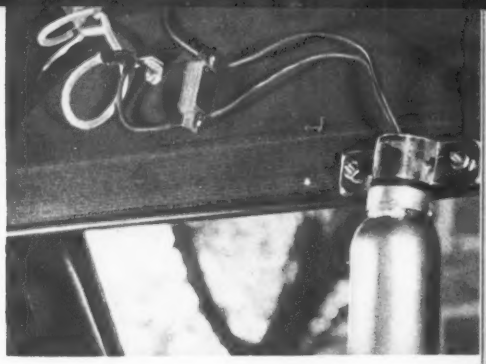
SMALL 40 WATT BULB HUNG UNDER HOOD ALL NIGHT WILL KEEP ENGINE HEAD WARM - FREE CARBURETOR OF ICE DUE TO GAS TANK CONDENSATION



ECONOMICAL HOME CHARGER PLUGS INTO GARAGE OUTLET - INSURES KEEPING BATTERY AT PEAK ALL WINTER LONG



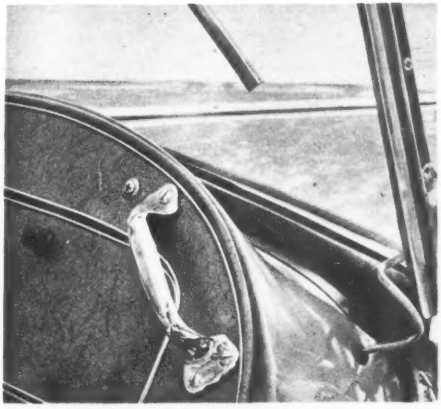
FORCED TO PARK OUTSIDE ALL NIGHT, CHOOSE AN INCLINE TO ROLL DOWN WHICH SAVES BATTERY FOR GOOD IGNITION

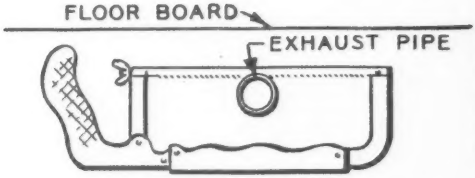


A small light attached to sun visor with a strap of tin and machine screws makes it easy to check maps at night. One wire is grounded to screw in visor bracket and second wire goes through toggle switch to screw at back of cigarette lighter.

CAR KINKS

Below: An ordinary nickel-plated drawer handle makes a sturdy and inexpensive assist grip for attachment to the dashboard of a sports car.





By inverting hacksaw, above, it is easy to saw off sections of damaged or rusted exhaust pipe.

Prewarming oil in cold motor can be done with a heating lamp placed directly under crankcase.

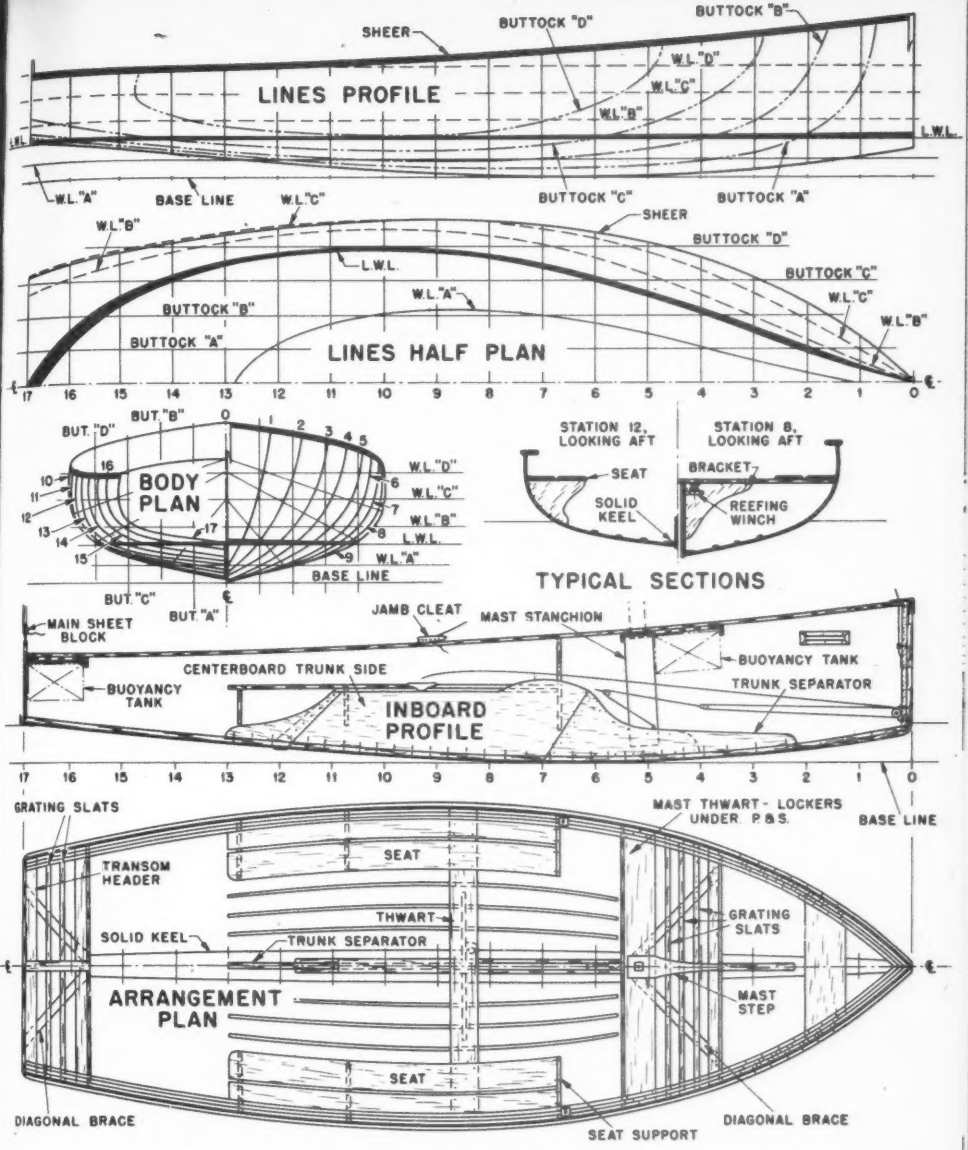
Below: Spotlight mounted atop auto is more rotatable than side-mounted type and makes control handle accessible to driver or passenger, yet does not interfere with driving. Wires can be concealed in upholstery to make a neat job.

Building THISTLE

Famed sloop has molded-plywood hull. Length: 17 ft. Sail area: 175 sq. ft. Beam: 6 ft. Depth amidships: 27 in.

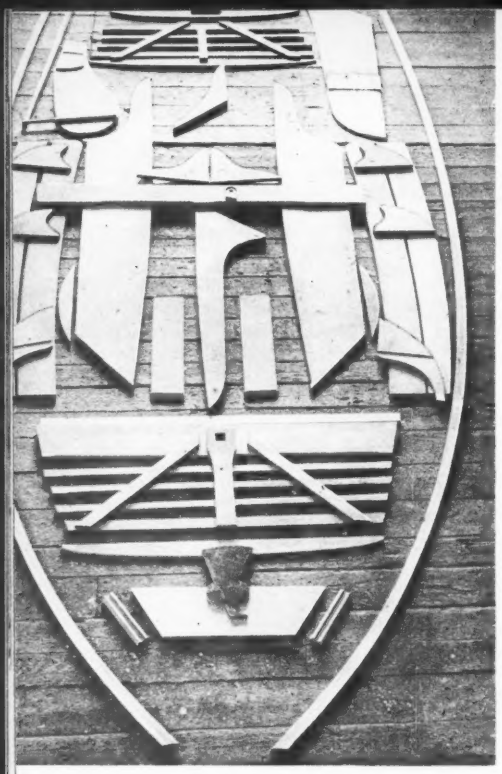
Part I

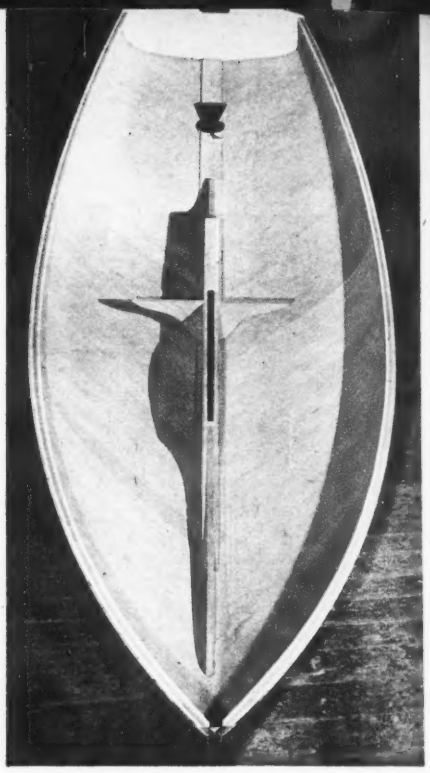
By Yngve Edward Soderberg



DESIGNED by Gordon K. Douglass, internationally known sailor and builder, the Thistle has many qualities not generally found all in one boat. She's fast in light airs, yet is at her best in a hard planing breeze. She's a hot racing boat, but is also an excellent family day sailer. Top racing skippers rave about her competition qualities, yet she's a safe boat for beginners. She's light—her molded hull weighs but 300 lbs. without gear—and at the same time she's roomy—her 6x10-ft. cockpit has seats for eight persons and enough floor space to spread out two sleeping bags or air mattresses.

An accompanying drawing shows her lines. See how the fine entrance blends into a deep, powerful chest and on into a long, clean run. The deep forefoot takes her to weather while the long run and flat stern allow her to plane at high speeds. Above the water line, her full bilges give reserve





Left: Wooden parts that must be installed in hull to complete it. Right: Hull with centerboard trunk, transom, and inwales installed. The thwarts, gunwales, gratings, and seats are added next.

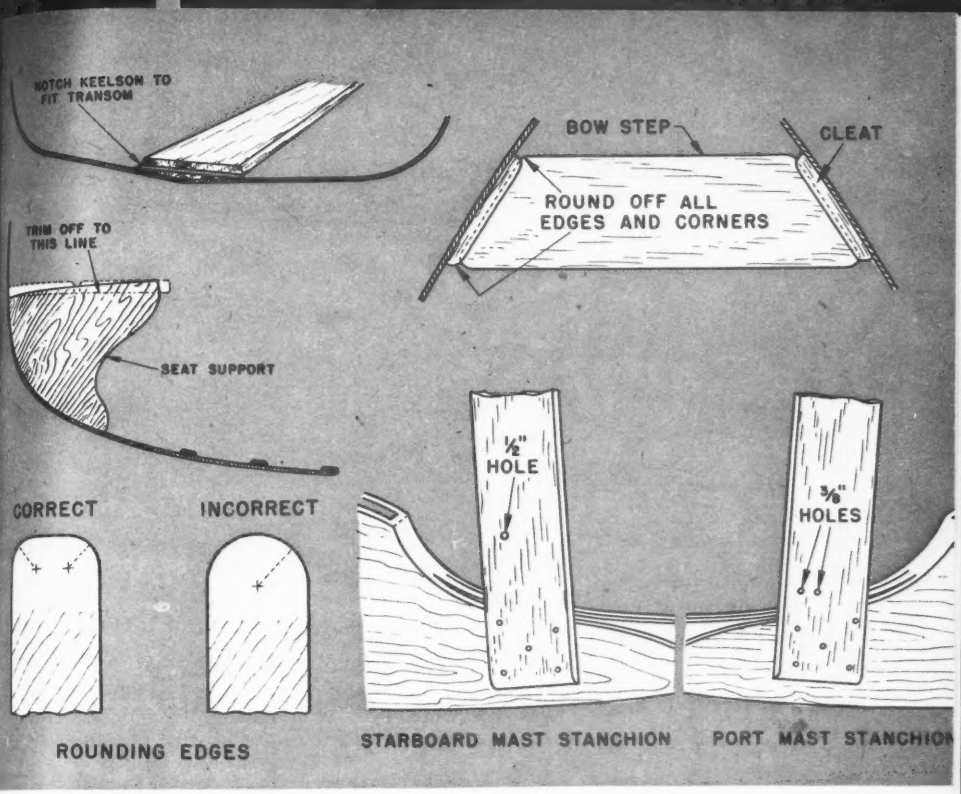
buoyancy to carry a load, to stiffen her in a knockdown, and to lift her over oncoming seas.

All in all, she is a beautiful boat and I fell in love with her. But could I afford her? Complete with sails, including a spinnaker, her cost is over $1,600. This was much more than I felt I should spend, so I had just about resigned myself to buying a smaller boat when I learned that she could be bought in varying stages of completion. Correspondence with the designer developed the fact that over a third of the 700 Thistles now in existence had been assembled by their owners. With the benefit of having the molded hull all built for me, I figured that I could hardly go wrong if I used average intelligence. So I bought a Thistle kit from Douglass & McLeod, Inc., Painesville, Ohio.

The Thistle is available in five different steps of completion. First, of course, you can purchase the completed boat. Second, you can buy a complete but unfinished job and sand and paint it yourself and then install the hardware. Third, you can get a kit consisting of the hull with centerboard trunk, transom, and inwales installed; all other wooden parts shaped and sanded; and all hardware and fittings. This should take you approximately 130 hours to complete. Fourth, you can purchase a more elementary kit consisting of the hull as it comes from the mold, all wooden parts, and all hardware and fittings. You should be able to complete this kit in about 225 hours. And fifth, you can buy just the hull as it comes from the mold and, working from plans available from the MECHANIX ILLUSTRATED Plans Service, fabricate and install all the other parts.

I chose the fourth alternative and in the hope that others in the same circumstances may benefit by the notes I kept, here is my story on how I completed my boat, which I named Scotch and Sody. The first thing I did was to make out the following work schedule:

1. Boat right-side up
   A. Establish sheer heights with girth stick, then trim sheer
   B. Install inwales
   C. Shore up boat, level and true
   D. Assemble and install centerboard trunk



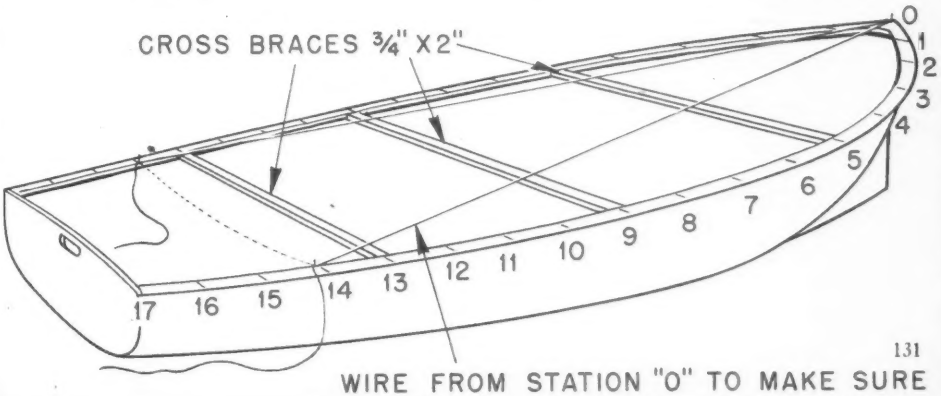
E. Install transom
F. Install flooring slats
G. Install seat supports and seats
H. Install gratings and mast stanchions
I. Install bow step

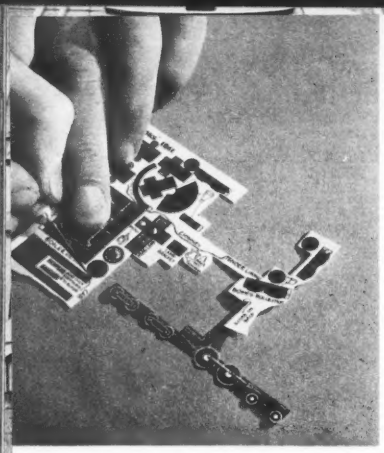
2. Boat upside down
   A. Fair in outside stem and keel piece
   B. Sand outside of hull
   C. Scribe boot top
   D. Paint bottom, topsides, and boot top
   E. Install centerboard gaskets, which prevent water from surging through slot, and keel molding

3. Boat right-side up
   A. Install gunwales
   B. Sand and varnish interior and transom
   C. Install hardware

4. Assembly of parts
   A. Centerboard
   B. Rudder and tiller
   C. Mast
   D. Boom
   E. Tanks

The difference [*Continued on page* 150]



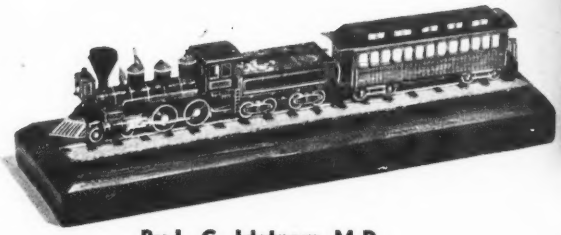


Above: Micro-Model parts are cut from the stamped cardboard pattern with a sharp knife.

Below: Tender and other components are glued to chassis. Right: Completed model.

THE MODEL MAKER'S
ROUNDHOUSE

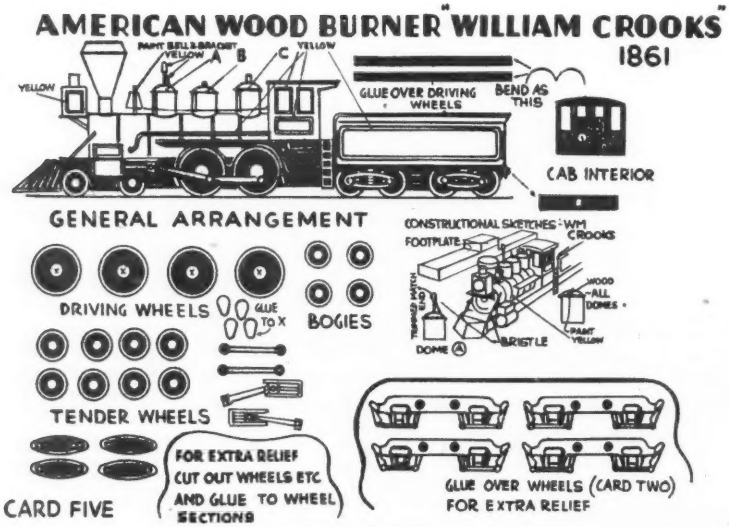
Micro-Models



By L. G. Idstrom, M.D.

APPEALING to the hobbyist who likes to work with miniatures, Micro-Models are tiny replicas of famous locomotives, ancient galleons, castles and other objects of historical interest. Patterns for the models are printed in color on cardboard stock to a scale of 2mm to the foot. The only materials needed to construct them are a sharp knife, scissors and glue.

Patterns for over 150 Micro-Models are being distributed in this country by Jenid Imports of Wayzata, Minn. •



Sample of full size pattern.

1st Prize ($10) .....Shipwreck
A real shipwreck taken near San Francisco by Helen Nestler of Strathmore, Cal. Rollei negative.

$5.00 Award .....In Tara's Hall
Taken by Herbert Doberstein of Cleveland with a Speed Graphic camera and three photofloods.

MONTHLY

PHOTO CONTEST

Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Please address your entries to: Photo Contest, *Mechanix Illustrated*, 67 W. 44th St., N.Y.C. 36

$5.00 Award .....It's Cold Outside
Scene was recorded with a 10-second time exposure at f/11 on Super XX by J. Fulginiti of Wildwood, N.J.

$5.00 Award .....Waiting
A roll film camera was used by William Sage of San Marino, Cal. Exposed at 1/100th sec. and f/8.

Right type of background spells the difference between a good portrait or an indifferent one.

By Dick Krull

A Portable Background

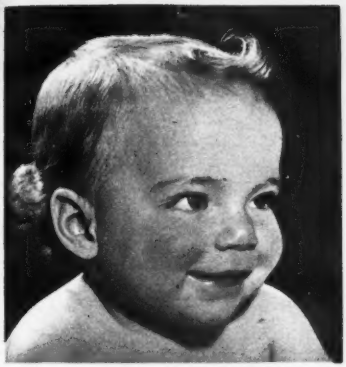
IF you have ever had background troubles, while shooting home portraits (and who hasn't) you have probably wished for a simple solution to this vexing problem.

This portable unit is designed to rid you of those background worries. It consists of a carrying box which contains one black window shade, one white window shade and a 3/8 in. steel rod. In use, the box rests on the floor and the extended shade is supported by the rod. It takes only a few seconds to set up the unit and it can be taken down just as easily.

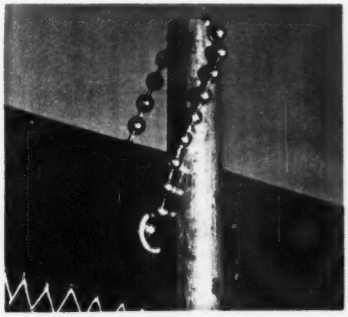
The size of the shades in the unit illustrated is 6x6 ft. This, of course, may be altered to suit your particular needs. However, I have found that the large size allows greater freedom of movement and is indispensable when shooting family groups. •

PARTS LIST

2 ends, 3½" x 5½" x ⅜"
2 sides, 3½" x 74¼" x ⅜"
1 bottom, 4¼" x 74" x ⅜"
1 top, 6" x 74¼" x ¼"
1 support block, 2½" x 8" x ¾"
3 cleats, ¾" x 5¼" x ⅛"
2 blocks, 1" x 1" x 1"
4 corner angles, 2" x 2"
1 steel rod, ⅜" x 71"
1 black shade, 6' x 6'
1 white shade, 6' x 6'
2 leather straps, 1" x 22"
2 spring clips
4 window shade brackets
2 key chains
1 carrying handle

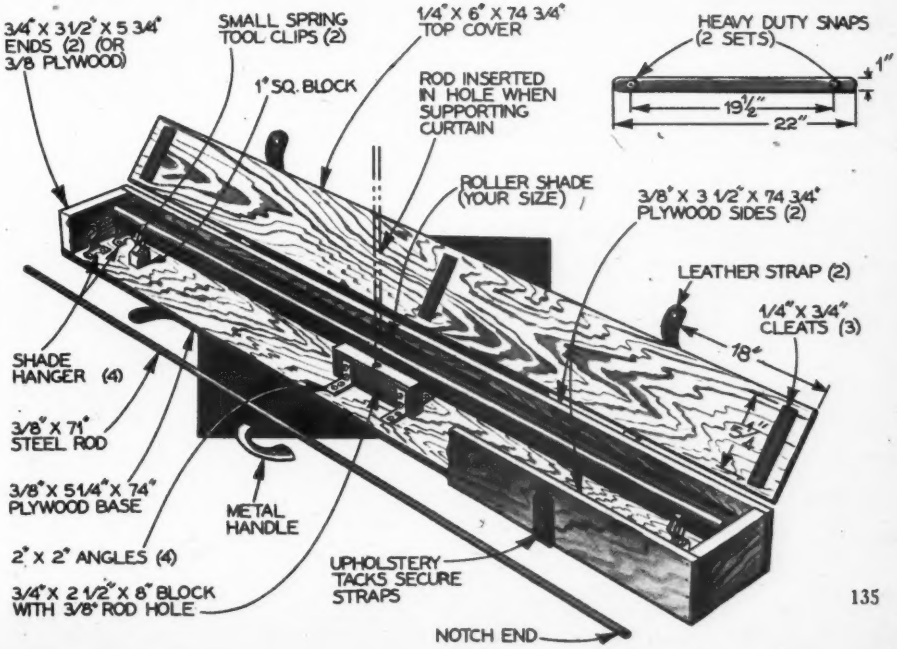


Dark background is used to set off the light curls of a baby. Light backgrounds used at far left for formal portrait.



Key chains are used to hook the shades to the support rod. The top of the rod is notched to hold chain securely.

To set up, open the box, place the support rod in the center hole, draw up background and hook chain over rod.

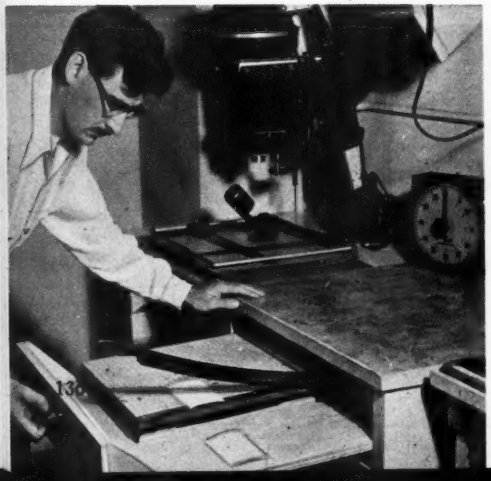


A rubber crutch tip makes an excellent "cork" for gallon-size solution bottles. Unlike metal screw caps, it will not corrode. Because of its hollow center it can be inserted tightly for a perfect air seal.

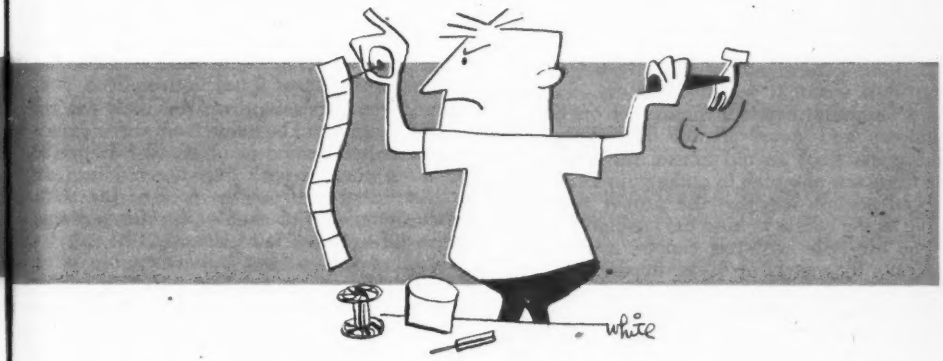
Eastman's hypo cans make fine savings banks for kids. Rip the opening with the key provided just long enough to pass a large coin. Decorate with single weight enlargement and cut new opening in paper.

photo handies

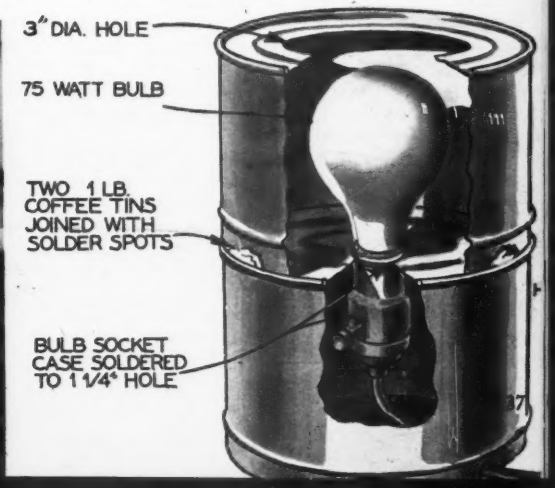
The use of easily identified markings on the 4, 5, and 7 inch guide lines on a trimming board will make the task of cutting sensitized paper under the safelight much easier. Use circles, squares, and triangles cut out of black tape. Photo at left shows a real space saver—a shallow drawer to house the trimmer.



Filters are always on the camera (even though not on the lens) if you attach the plastic filter case to the top of the camera as shown above. Use three small flathead wood screws. Then, by adding three strips of felt to the cover, as in photo at right, you'll have a handy parking space for that elusive sunshade.



A jiffy heater for keeping developing solutions up to 68° F. during the cold winter months can be easily constructed out of two pound-size coffee tins as shown in the photograph and drawing below. The top of the "stove" is wide enough to accept an 8x10 tray comfortably. Check the temperature frequently and turn off the current before required temperature is reached as some residual heat will remain in the stove.



Pocket Billiards Table

[*Continued from page* 100]

construction the interior structure of the door is exposed and there is nothing solid by which to fasten the pocket into the hole. The thin edges of the door surface are also exposed. If left unprotected the impact of the pool balls striking these edges in play would soon batter the edges shapeless and sliver the plywood. To reinforce all six pocket holes, sections of solid wood are prepared by shaping them to a thickness equal to the distance between the inside edges of the door faces and rounding them to the same inside curvature as the shape of the hole. After these sections are firmly glued inside the pocket hole, there is solid material to attach the pocket to and the plywood edges are also supported.

Construction of the rails and attachment of the cushions is simple and easy. Cushions are simply lengths of half-inch rubber air-pressure hose, cemented or nailed into a prepared recess in the stock that is to be used for rails.

Rail stock need not necessarily be shaped from new wood. If you have access to a few old ornamental headers removed from above windows and doors in the remodeling or taking down of an old house, they are just the thing out of which to make your rails. The curved portion has just the proper shape to serve as the recess to hold the cushion rubber.

The air-hose cushions can be attached to the rails by means of ¾-in. brads spaced at 1-in. intervals. Start the nail and drive it until its small head compresses the rubber under it. If the driving is straight and true, the next hammer blow or two will sink the brad until its head has penetrated the outer thickness of rubber which will then pull itself off the brad and snap back to its original shape leaving the shank of the brad holding the cushion to the rail.

Pockets, sewn to a size the same as the hole (a job for your wife), are kept open with a hoop made of a strip of veneer bent to shape after soaking in hot water and end-stapled to proper size. This hoop helps snug the pocket into its hole and if made with precision will hold the pocket in place without further cementing or tacking.

Construction of the folding legs can be by any one of a number of standard methods. Attachment at all points where legs and braces fold is by means of hinges. At points where brace ends fasten to the legs when the table is set up, the connection is by means of removable-pin hinges.

A rigid and light-weight cover for the table can be made from a piece of tempered hardboard with stiffeners fastened to its underside and having side pieces attached for appearance. Such a cover not only serves as protection to the cloth and cushions but also gives additional utility to the table, enabling it to be used as a cutting table for sewing, etc.

The cloth is attached to the table before the rails are attached or the pockets inserted by stretching and tacking the cloth at the edges which will be covered by the rails. The cloth is not cemented or glued to the table.

Rails are attached to the table by screws. Position the holding screws carefully, for their heads will become the spots, or diamonds, that serve as aiming points for your cushion shots. Standard positioning of the screws divides the length of the table into eight equal portions and the width into four. (See plan view sketch.)

Table spots are centered one at each end of the table and in line with the second pair of diamonds from each end. An easy way of attaching them to the cloth is to cut them from tailor's mending tape and press them to the cloth with the tip of a hot flatiron.

The form for racking up the balls for the start of a game can be made from three equal-length strips of wood or plywood fastened at the three corners with half-notch joints cut at thirty degrees from the face of the strip. Inside dimension of each of the three strips, measured between joint slots, is $10\frac{3}{16}$-in.

Building this pocket billiards table is an enjoyable home project that will pay lasting dividends in many evenings of entertainment that is fun for all ages and both sexes. Call over your neighbor and get started on your first game. It's real fun, as you'll soon find out when the action starts. •

Cost of material was:

Flush door 3' 10" x 6' 8"	$ 9.99
Green cloth	6.50
Rails, legs and braces were salvaged oak from a remodeled house	3.00
Cushion rubber (discarded air hose)	1.00
Pockets (any colorful sturdy cloth)	1.00
Screws, hinges, brads and shellac	3.00
Billiard balls (1⅞" diameter)	13.60
Two cues (48" long)	5.60
Chalk (2 pieces)	.10
Total cost	$43.79
Cover for table:	
Tempered hardboard, 1 sheet of ⅛"	3.84
Plywood for sides, ¼"	1.36
Total cost of cover	$ 5.20

[*Continued from page* 126]

you get some response, however weak, you'll know you are on the right track. Stop and then try again.

Patience is a real aid in meeting the cold starting problem. But don't confuse this with blind determination. People who r'ar back and let the starter grind away are headed for a lot more than delay. The car talks back during the process, and you have to know very clearly what it is saying.

Perhaps you are wondering how the accelerator pedal should be handled during the starting job. I once read an explanation of how the various makes of cars should be started. It was pointless because handling the throttle (by means of the pedal) depends more on the *condition* of the engine than on its name or type. No one rule can be given, but I can give you a few suggestions. Let's suppose you're taking the wheel of a car with which you are not familiar. Now what?

First, press down slowly on the accelerator pedal and then slowly release your foot. This may do three things. It may close the automatic choke valve should the latter happen to be still open. If the carburetor has a fast idling feature this movement of the accelerator pedal will set the cam. Then, if there is fuel in the carburetor bowl and in the acceleration well, some fuel will be sent into the intake. Next depress the clutch pedal, switch on the ignition and operate the starter by pushing the pedal for the starter, pushing the dashboard button or turning the ignition key (depending upon the car's particular arrangement). If there is no response, stop cranking, wait a few seconds, pump again on the accelerator pedal and try the starter again. If the engine fires you will know that on a cold day this particular motor needs one or two jabs on the pedal before it will start. The success of the jabbing tempts many drivers to overdo it. This usually floods the engine and slows the start. Waiting will bring things back to normal again, but if the battery is up to par, you go slowly down on the pedal until the throttle is wide open and then crank. This clears the cylinders quickly. It is known as "de-choking."

Incidentally, this is the trick to use if you want to re-start the engine if it has been running a little on the hot side on a cold day. Conditions causing such winter fever are a high opening motor thermostat used with alcohol instead of ethylene glycol, excessive loss of anti-freeze, a partially frozen cooling system, driving through heavy snow, incorrect gas mixture, a slipping clutch or insufficient oil in the fluid coupling if the car has fluid drive or an automatic drive.

If the driver pumps four or five times on the accelerator pedal and the engine fails to start he may be wasting his time because the chances are that there is no gasoline in the carburetor bowl and the fuel pump is ailing. In such cases, a push for a start is most effective.

If the car is equipped with a hand choke it is a good idea to test crank without pulling the knob out. If there is no response from the engine then pull the choke control all the way out, and crank. Push it in toward the halfway point as soon as the engine fires and then ease it all the way in during the warm up. As long as the engine pops back through the carburetor, when accelerated, some choking still is needed.

With an automatic choke you may need to remove the air cleaner to see if the choke valve is closed. Use a flashlight for the carburetor look-see, or the garage or dash trouble light. While at it, pull on the throttle control rod to see if gasoline squirts into the carburetor's throat. Appearance of gasoline here indicates that there's fuel in the float bowl and that the acceleration pump is on the job.

One motorist with a car that has accelerator pedal starting said he can't pump on the pedal because it tends to damage the starter drive. All he has to do is switch off the ignition while pumping on the pedal. And speaking of variations in individual makes of cars, bear in mind that sometimes the delay in starting is due to trouble in push button or key starting systems which involve solenoids and relays. Much trouble in starting can be traced to poor grounds. This can be at the battery or even in such unsuspected spots as the distributor.

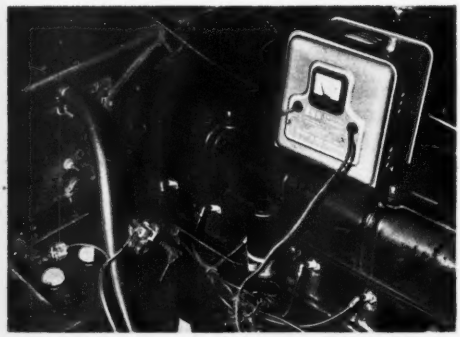
Watch the weather for hints as to why the engine won't start. If there is dampness in the air, there probably is moisture on exposed ignition parts, especially the porcelain of the spark plugs. These should be kept clean because dirt on them holds moisture. A popular trick on a cold morning is to open the garage doors and allow the sunlight to go to work. I have seen a battery recover enough in two hours to start an engine warmed only 10 or 15° by the sun. And speaking of warmers, while these are an effective solution to garage starting, don't forget that your bag of tricks will be needed when you have to park a long time in the open away from your home.

When using another car for starting always push, if possible, rather than tow. If the dis-

[*Continued on next page*]

Car Care

[*Continued from page* 139]



Good insurance against hard starting is a fully charged battery. Charger shown in photo, made by Electric Service Corp. of Minneapolis, charges at 7 amps and tapers off to 3 as battery comes up to par.

abled car starts while being pushed it can jump ahead without involving the aiding car. However, make sure bumpers are not locked. With conventional cars place the gears in second and, when towed up to a speed of about 10 mph, slowly engage the clutch with the ignition switched on. Cars with automatic drives generally need to be pushed to around 25 mph before they'll start. This is the technique with such cars:

Leave the control lever in the N (neutral) position until the car is being pushed up to about 15 mph. Then move the lever to the D position. On Hydra-Matic and Power Glide the speed should be around 20 mph. It ranges between 15 and 20 for Studebaker's automatic drive and about 25 mph for Ultramatic. There's some difference of opinion as to whether it is ever desirable to shift into low with these systems, including Dynaflow and Fordomatic. When starting on glare ice of course use the highest gearing. For the Chrysler systems using the simple fluid drive, a start can be had at 10 mph. These cars can also be put in the low range.

Careful attention to these modern rules for cold starting will eliminate need for such questionable tricks as pouring hot water on the intake manifold, or priming the engine with raw gasoline squirted into the spark plug holes. Tricks that still pay, however, include leaving the car on an incline with wheels chocked by large stones so that a coasting start can be made. I wouldn't want to try cranking an engine with a tire wrench with one rear wheel jacked up, but I'll certainly go for one of those chargers which keeps the battery up to par by plugging into a dash socket. •

Colonial Magazine Rack

[*Continued from page* 110]

for attaching to the legs. Clamp, or drive, snugly together.

The other side has two stretchers 1x21-in. with grooves in which to set a ¼-in. plywood panel 2½x21-in. Assemble and attach to the legs with dowels, as before.

Measure and lay out as shown in sketch. The separators must fit snugly so cut the separators and the center separator only after checking the temporarily assembled ends and sides. This is done so that any slight change in measurement can be corrected before proceeding. After checking and cutting, assemble the separator panels in the ends and glue them in place. Put a clamp on when all are in place and proceed to assemble the legged sides to the center assembly. Glue in place and check squareness.

Cut the handle and scroll the kidney-shaped hand hole. Set handle in place after grooving ¼-in. wide and ¼-in. deep on the bottom. This is so the center panel will fit firmly into the handle. Glue in place and file and sand smooth around the hand hole. Also file the ⅛-in. angles on the legs and sand smooth. The bottom is closely and carefully fitted from the underside and retained in place with center and end strips. •

Build Your Circular Saw

[*Continued from page* 120]

properly by moving motor along the slots.

A 1,750 rpm, ⅓ hp motor can be used along with a 7 or 8 in. saw blade, a 3 or 4 in. motor pulley and a ½ in. V-belt.

Having trued the table top to the correct size and fixed the 1x1x⅛ in. metal angle fence to it, the plywood top is then screwed to the piano hinges which have already been screwed into the frame hinge board (as per sketch), allowing an overlap for the fence guide to slide along. The slot in the table top is made by merely starting up the saw and bringing the board down slowly onto the rotating blade.

If desired, a cardboard sawdust catcher can be built into the frame. A plain box of proper dimensions is simply tacked in place inside the saw frame under the blade.

Another useful item is a steel channel set flush into the plywood table top for tracking a miter gauge. Although this channel can be made by milling out a steel bar $\frac{5}{16}$x1 in. in cross section to suit some particular miter gauge, it can also be built up of steel strips which can be bolted together to the plywood top. In this case only a hacksaw and drill are required. •

Milk Can Concrete Mixer

[*Continued from page* 123]

This is the part that will give you the biggest kick: a perfectly mixed batch of concrete with little effort on your part.

carrying handles on the can will probably be in the way, they should be removed.

A ring and pinion gear from an old car forms part of the series of gears and pulleys used to drive the unit. The shaft from the pinion runs through ball bearings and these should not be removed. Two maple blocks, 2x2x6 in. are chucked together in the lathe. A hole is made through the center of these to the same size and shape as the bearing. The process is repeated for the second bearing.

The ring gear, mounted on a piece of ⅛ in. Masonite with its original screws, is fastened to a 12 in. disk of ¾ in. plywood. At least eight ⅞ in. No. 12 flathead screws are needed as the driving power transmitted at this point is terrific. The entire ring gear unit is then set into the outside bottom of the milk can and secured with screws run through the rim, as shown in the drawing.

Friction is reduced by having the can ride on eight ball bearing wheels taken from a pair of roller skates. These wheels are each set in a mortise cut in the center of a piece of pine 1¼x1¼x16¼ in. and held in place with ⅜x1½ in. machine bolts and nuts. Four of these roller framers, assembled into a square shape with end lap joints, make one of the two cradles needed.

Two strips of ⅛x⅝ in. band iron are run around the top (front) end of the can to form a track for the forward set of wheels. This track is necessary to keep the ring and pinion gear in mesh when the machine is running and also to keep the can from sliding from its cradle when it is being filled or emptied.

The cradle is next assembled and adjusted until the can is snug yet will turn freely in its track. Then it is crossbraced securely. The pinion gear may now be positioned and mounted on the framework with ⅜ or ½ in. machine bolts. This must be done accurately or the gears will not mesh properly. It will be found that a more rigid assembly results when the two sets of bearing blocks are joined as one.

Strips of ⅛x⅝ in. wrought iron are run completely around the framework and fastened in several places with wood screws to further brace and strengthen the unit. The ¼ hp motor is mounted on top. Its 1,725 rpm speed is reduced to turn the can under load at about 12 rpm by means of pulleys.

The pulleys available were designed for round belting such as used on a sewing machine. As the large 13 in. size needed was quite expensive, one pulley was cut from ¾ in. stock on a band saw. A ¼ in. groove was made by revolving the 13 in. disk over the center of the blade on the circular saw. This groove was made round, and to a size to fit the shape of the belt, with a round file. The wooden pulley was then mounted on the shaft of the pinion gear with a ¼ in. round piece of steel run through the hub. The belt that turns this large pulley is kept taut by means of an idler pulley and a spring.

An old kitchen table with the legs cut down is ideal for holding this mixer. A framework of ¾ in. stock holds it in place in one corner at one end so that the large pulley hangs over the side. A couple of cement blocks or heavy stones on the opposite end hold the table firmly in place on the ground when tilting and emptying a batch of concrete.

The strength of concrete depends upon the right mix. The strength also depends on whether the mix was properly cured by being kept damp for at least a week. The Portland Cement Association furnishes excellent references on the use of their product. (See MI, Nov. 1952, page 124.) A satisfactory load for this mixer is 1½ coffee cans of cement, 3⅓ cans of sand and 4½ cans of gravel. If the sand is dry use about a quart of water. A high strength mix is 4:2:1 (four parts of gravel, two of sand and one part of cement). •

BUILD YOUR OWN TELESCOPE

If you can repair a leaking faucet, you can make a reflecting telescope. For a complete set of plans, photographs, and instructions that will show you how to construct MI's portable six-inch telescope, send $2.00 to MI Plan Service, Fawcett Place, Greenwich, Conn. Please ask for Plan No. P-6.

By Edwin F. Hanson

The finished case. It is made of ½ in. plywood, reinforced with brass corners. In addition to processing solutions, it has room for camera, film and equipment.

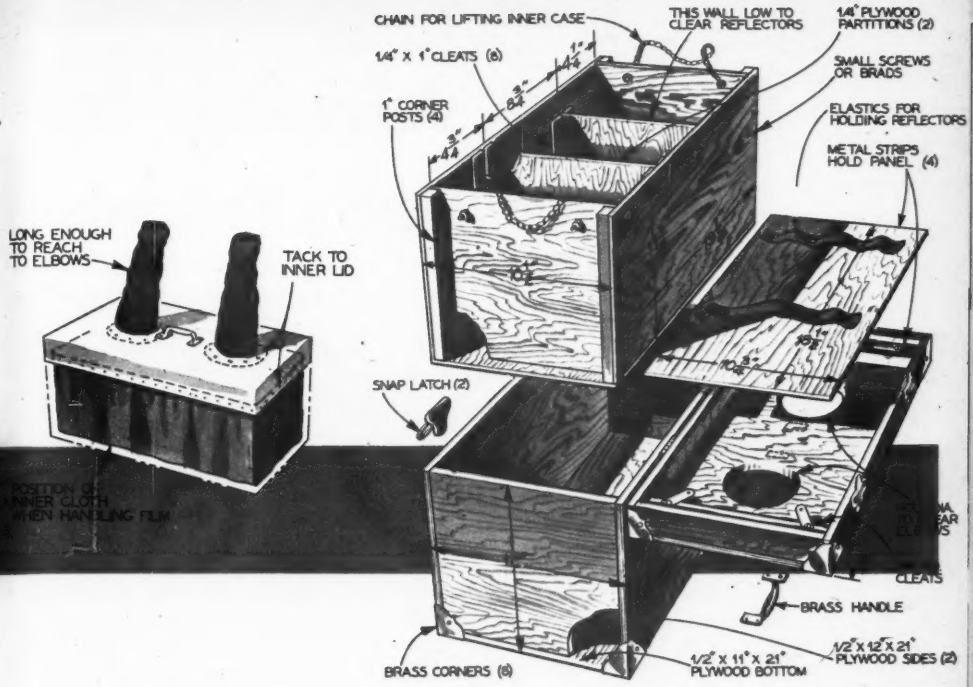
A Darkroom in the Field

Combination carrying case and darkroom enables you to check important negatives while shooting.

HAVE you ever come home from an important picture-taking assignment, developed the negatives—and then gotten a sinking feeling in the pit of your stomach as you suddenly realize that your most wanted shots simply weren't there? Possibly it was a slide which was not withdrawn, or a film tab which was not pulled, or even maybe a lens cap which was not removed. Whatever the reason, you cannot cry over spilled milk, the only thing to do is to go back and reshoot the pictures if this is possible. If this is impossible—as sometimes happens—offer lame apologies.

When the tray is lifted, it exposes flashgun department. Note use of chains. Gun is secured to the bottom of the case with wide elastic bands.

Cut film holders and tank being placed in box prior to loading films for developing. The black broadcloth drape helps guard against light leaks.



A solution to this problem is just that—keep your developing solutions on hand. How? By building this handy combination carrying case and photo lab. Unlike the ordinary changing bag it gives you plenty of room in its innards to load and unload cut film holders as well as to develop the films.

As you can see from the drawing, the "darkroom" consists of a plywood box with an inner carrier which holds a camera, accessories and developing solutions. This tray can be lifted out by means of two chains.

If after a shooting job you want to check the results, remove the tray, and place the cut film holders and the film tank in the bottom of the box. Close the lid and extend your arms through the black sleeves. The inner drapes, made of black broadcloth, offer extra protection against light leaks.

It's best to use a "daylight" type of developing tank as then the actual developing and fixing procedures can be carried out in daylight rather than in the confines of the box. Stock developing and fixing solutions in quart brown bottles. If you like, you can include a quart of water for rinsing. •

Once the tank has been loaded, the actual developing procedure can be carried on in broad daylight. Solutions are in brown quart bottles.

Procedure when developing roll film. Because of large area, your hands will not sweat as they do when working with ordinary changing bag.

Adventure in Color Pictures

The world of miniature color photography is exciting . . . rewarding. Here you can pick a "team of two" to help you discover it.

THERE'S nothing more satisfying than "shooting it in color" on Kodachrome Film, then staging grand color shows. On these pages you see expert Kodak miniature cameras for taking color shots . . . projectors and viewers for showing big images of the beautiful color slides you get. Let your Kodak dealer help you select a camera-and-projector "team" to fit your budget. Ask, too, about full-color prints and enlargements from your slides.

• • •

Latest in home projection is the brilliant new Kodaslide Highlux III Projector, shown above. Its 300-watt lamp, combined with a specially designed optical system including Kodak Projection Ektanon Lens, 5-inch *f*/3.5, gives top brilliance plus unsurpassed color purity and over-all definition. Three-way slide cooling—by baffles, a fan, and heat-absorbing glass. $56.50 (including carry case with built-in fan).

New economy 35mm. camera — The new Kodak Retinette Camera is a miniature beauty. Slips into small coat pocket. Fine three-element *f*/4.5 lens assures sparkling color slides. Has automatic film stop, counter, double-exposure prevention. 8 speeds to 1/300 . . . and a delayed-action setting. Built-in flash "synch." Only $59.50.

New model of famous Retina Camera—The new Kodak Retina IIa Camera with Schneider Retina-Xenon *f*/2 Lens and Synchro-Compur Shutter, 1 second to 1/500, is designed for action work in color. Single window for range finder and view finder; rapid lever-action film wind; automatic film stop; double-exposure prevention. $164.10.

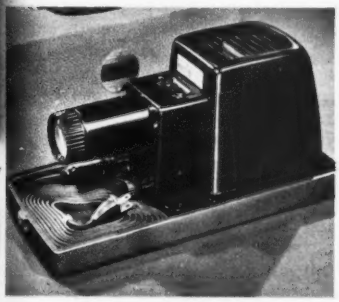
Moderate-price range-finder "miniature"—The new Kodak Signet 35 Camera features Kodak's finest lens—Ektar *f*/3.5—for extra color brilliance. Speeds to 1/300. Built-in range finder, flash "synch." Exclusive ball-bearing action for ultra-smooth focusing; automatic exposure counter; film stop; double-exposure prevention. $92.50.

Kodak Pony 828 Camera (left)—Inexpensive color camera with color-corrected Kodak Anaston *f*/4.5 Lens; Kodak Flash 200 Shutter. Takes 8-exposure black-and-white, Kodachrome, and Kodacolor Film. Only $31.15.

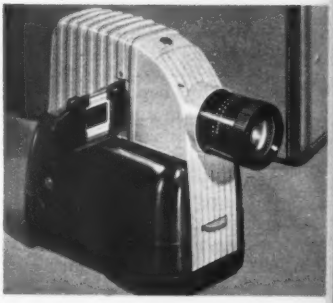
Kodak Pony 135 Camera (right)—Makes superb color slides on Kodachrome Film. Has automatic film stop and exposure counter. Uses all Kodak 135 Films, 20 or 36 exposures. A good buy at $35.75.

Kodaslide Table Viewer, Model A (left)—Projector, screen, and slide changer in a single unit. Projects brilliant images in lighted room. Takes 75 cardboard or 30 glass slides. Images appear as push-pull plunger positions slides. $97.50.

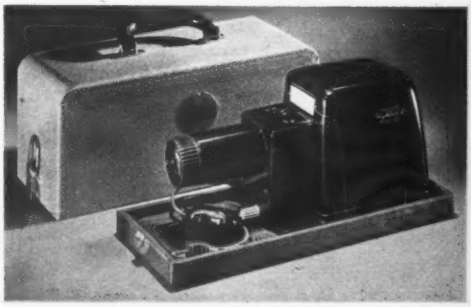
Kodaslide Table Viewer, 4X (right)—This budget-priced viewer enlarges slides four times on its built-in screen. Showings are effortless. $49.50.



Kodaslide Merit Projector (left)—Features improved slide-feeding mechanism on top of projector, eliminating danger of jarring instrument. Includes Kodak Projection Ektanon Lens, 5-inch *f*/3.5. $26.10.



Kodaslide Projector, Master Model (right)—Fast lenses, 1000-watt lamp can deliver more light to screen than any other 2 x 2-inch slide projector. Choice of 4 lenses. From $169.00.



New Kodaslide Highlux II Projector (right)—This highly capable 200-watt projector is a companion product to the Highlux III. Features include Kodak Projection Ektanon Lens, 5-inch *f*/3.5; heat-absorbing glass for slide protection; two Lumenized condensers for uniform light distribution over the picture area. If, later, you wish to convert to 300-watt screenings, you can do so very easily. Simply purchase the Kodaslide Highlux Blower Case for $19.20 and insert a 300-watt lamp (extra). Price of the Highlux II, $36.50.

You can see this equipment, and many other interesting items, at your Kodak dealer's. Stop in any time and ask for a demonstration. His professional knowledge and experience will prove valuable in helping you make a selection that will best suit your needs.

Eastman Kodak Company, Rochester 4, N. Y.

Prices subject to change without notice and include Federal Tax where applicable.

Kodak

TRADE-MARK

Progressive phases of a lunar eclipse taken on a single sheet of film.

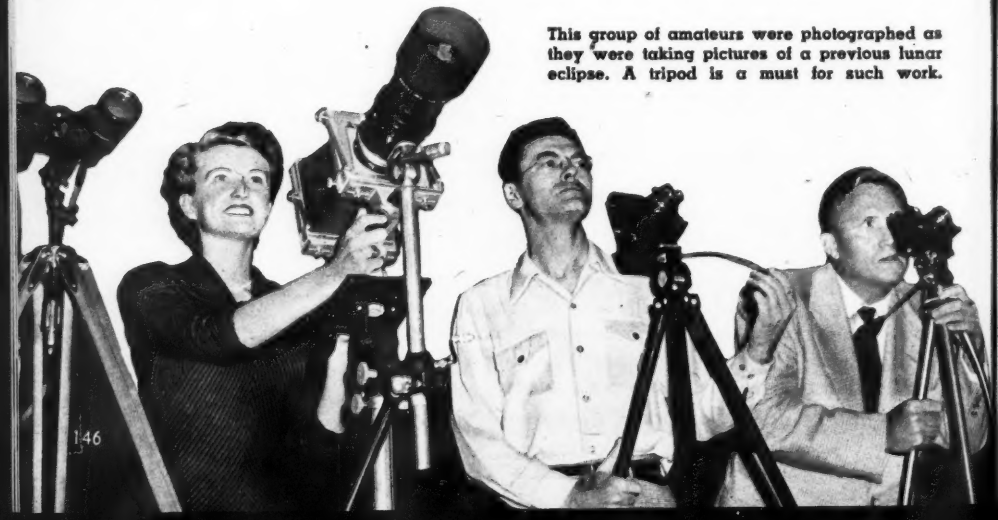
The Amateur Telescope Maker's Page

How to Take Photographs of the LUNAR ECLIPSE

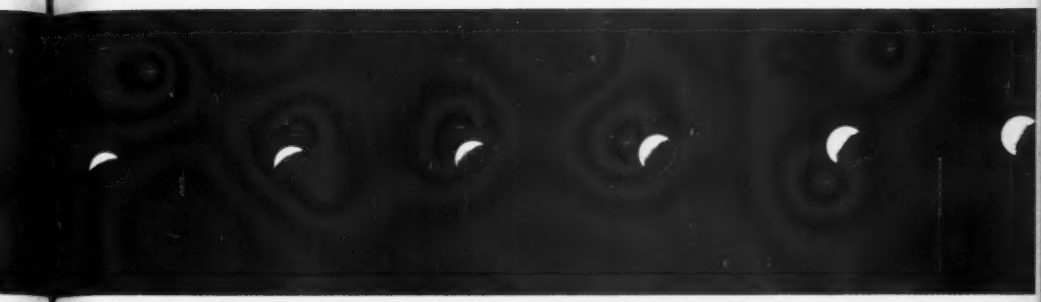
ON Thursday evening, January 29th, the full moon will rise partially eclipsed all along the Eastern seaboard of the United States. It will then move slowly into total eclipse, an awesome spectacle that will be visible in most of the country. Because this particular eclipse will occur quite close to the horizon, it offers a particularly good opportunity for photographers to take pictures of this event with a suitable foreground in order to lend depth to such pictures. How to take such pictures will be explained shortly.

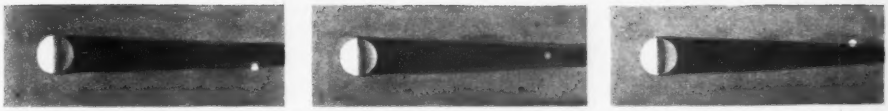
Every shadow of an object, where the source of illumination is greater than a pinpoint consists of an outer, light shadow called the *penumbra* and a darker inner shadow called the *umbra*. The great conical shadow cast into space by the earth is no exception. An imaginary person on the moon (when *we* see a *lunar* eclipse), would see a partial, solar eclipse. If he were in the umbra area the sun would be completely hidden and he would be viewing a total solar eclipse,

We, on the earth, when we view a total lunar eclipse, still see the moon glowing dull red during total obscuration. Why? Simply because our earth has an atmosphere extending many miles into space. The sunshine which is blocked by the solid mass of earth is refracted by this atmosphere into space and falls on the surface of the moon, causing it to glow red.



This group of amateurs were photographed as they were taking pictures of a previous lunar eclipse. A tripod is a must for such work.





MOON ENTERS PENUMBRA OF EARTH'S SHADOW – PASSES THROUGH UMBRA (TOTAL DARK SHADOW) – EXITS THROUGH PENUMBRA

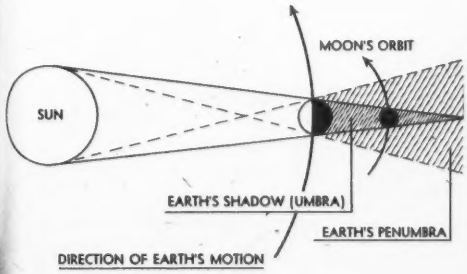
On January 29th the moon will enter total eclipse at 6:05 pm EST and will start to emerge again at 7:30 pm. At 8:40 pm the moon will have cleared the umbra part of the earth's shadow and will leave the penumbra at 9:54 pm.

To take suitable pictures of this phenomena you will need a camera of course, and a sturdy tripod. All of the pictures can and should be taken on a single sheet of film. Locate the moon in the lower left hand corner of your finder (the moon travels from left to right, in an ascending arc). Make an exposure every ten minutes. This should give you at least 7 images on a sheet of film. The camera should, of course, be positioned so that the longest dimension is from left to right and not up and down.

Use the following exposures if your camera is loaded with a medium speed film such as Eastman's Plus X or Ansco Supreme. With the moon in the clear make an exposure at 1/50th of a second at f-11. At the first visible "bite," 1/25th at f-11. Ten minutes after the first bite use 1/25th at f-8. Twenty minutes later use 1/10th at f-8; thirty minutes later 1/5th at f-8; forty minutes later, at f-6.3; fifty minutes later, ½ second at f-5.6; at totality, two seconds at f-5.6.

As the moon starts to emerge work backwards. In other words, start in with the longest exposure and gradually work up to the shortest [*Continued on page* 174]

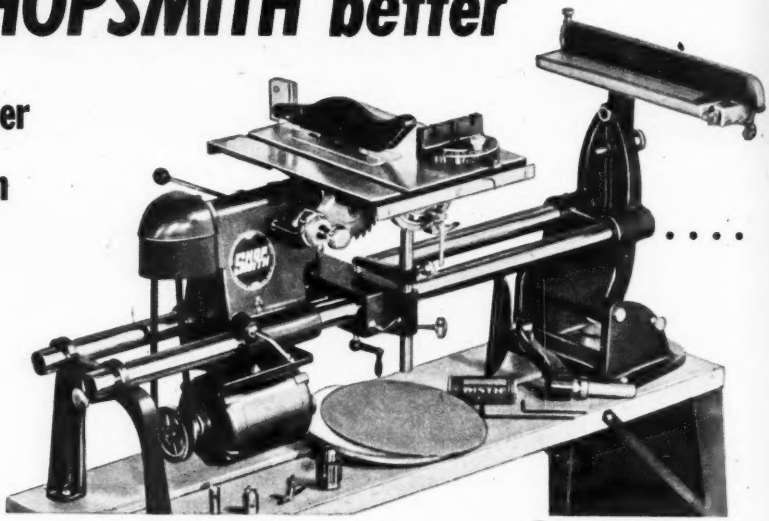
The drawing below (supplied by the Hayden Planetarium of the American Museum of Natural History) shows how the moon is eclipsed by the earth.



An actual photograph of the moon partially eclipsed by the earth.

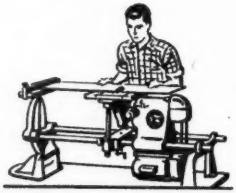
Experts (like you)...beginners, too... like SHOPSMITH better

than any other power tool in America!



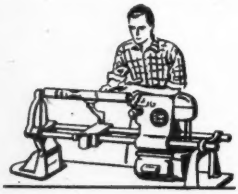
A COMPLETE Workshop!

Five superior tools in the space of one!

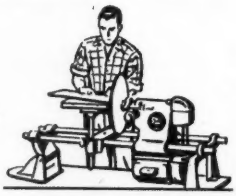


CIRCULAR SAW cross-cuts, rips, bevels or miters. Maximum depth of cut, 2¼". Depth regulated by built-in micro table-raising mechanism. Up to 48" between blade and fence!

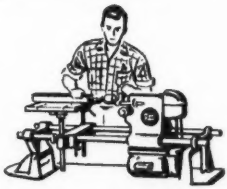
DRILL PRESS drills, routs, reams, mortises, countersinks wood, metal, plastic. Up to 27" between table and chuck. Saw fence miter gauge and tilting table provide automatic settings without special jigs.



LATHE turns wood, plastics. Extra capacity—15" swing, 33" between centers. Tool rest slides parallel to work; is quickly adjusted, locked into position for any operation, including faceplate turning.



DISC SANDER is a precision tool you'll use often. No "chatter" when beveling thin pieces. Plain and compound miter sanding. 12" sanding disc is dynamically balanced . . . installed instantly.



HORIZONTAL DRILL PRESS is ideal for pieces too big or awkward for vertical drill press. Length of work limited only by size of room. It's the *only* professional doweling tool available for the home workshop.

Complete 5-tool unit

only $189.50

Motor* and bench extra

*Special SHOPSMITH motor; heavy-duty, ½-hp., ball-bearing, capacitor, 110 V, 60 cycles—$34.50.

SHOPSMITH is America's largest selling power tool because it's a real *multi-purpose* tool that actually outperforms most saws, sanders, drills and lathes.

It offers hairline accuracy, tremendous capacity, important savings in money and space, and many quality features formerly found only in the most expensive professional tools. SHOPSMITH versatility means you have the proper tool, simplified adjustments and ready-made jigs for difficult or unusual operations, and to change from one tool to another takes less than 60 seconds.

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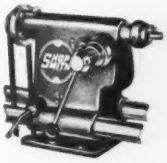
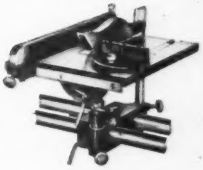


BALL-BEARING CONSTRUCTION. Spindle floats on *four* grease-sealed ball bearings. Spindle tip is induction-hardened, has reverse-tapered safety flat.

MACHINE-TOOL PRECISION. All moving parts are machined to precision tolerances. Headstock and carriage slide effortlessly on the ways.



HEAVY-DUTY CASTINGS. No stamped metal parts. Castings are fine-grain grey iron or rigidly ribbed, top-grade aluminum alloy.

EXCEPTIONAL QUALITY THROUGHOUT. Because they are used for all major operations, parts are made with special care from top-grade materials.

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Building Thistle

[*Continued from page* 131]

between a beautiful boat and one that is ordinary lies in the execution of small details of construction and finishing. No matter how good the materials, how carefully done the varnishing and painting, the final result will not be good if joints are not carefully fitted, edges and corners carefully rounded, exposed screw slots lined up, shapes and curves accurately faired up.

Giving the proper radii to rounded edges is essential. A half-round molding, for example, is not attractive. Narrow strips should have two radii, each less than one-half the thickness of the piece, rather than one large radius taking in the entire face.

A word about fastenings. The bottom edges of the centerboard trunk and transom are bedded in a compound such as Dolphinite. The gunwales are set in wet varnish so that they can be removed in case of wear or damage. All other joints are screwed and glued. You can use any one of the cold-setting waterproof glues such as Weldwood or Cascophen.

Following the sequence outlined in the work schedule, the hull is set up on horses 12 to 15 in. high. They should be level fore and aft as well as athwartships. Make a pair of chocks to hold the boat steady while working.

Stations can be determined by squaring with a carpenter's square from a long batten or wire run down the center of the hull. The sheer heights are determined by using a ⅛x¾-in. girth stick, 4½ ft. long, on which are marked the heights as given in the plans. The boot-top position is also given. The girth stick must follow the station line in a plane at 90° to the center line. Fair a ½x1-in. batten, 18 ft. long, through the marks, run a pencil line, and saw off the excess plywood.

The laminated inwales come glued to shape and beveled. Set them about $\frac{1}{16}$ in. below the sheer, fit the forward ends against the stem, check the fit of the bevels, and secure with glue—it should be applied to both surfaces of the joint—and 2-in. No. 10 screws on 4-in. centers. Mark the stations on the top of the inwales.

After the inwales are installed, the boat should be held to proper beam at Stations 5, 9, and 13 until the seats and gratings are in place. Use ¾x2-in. cross braces, clamping or tacking them to the inwales.

Lay out the centerboard slot on the top of the keelson. A portable circular saw will save time and energy when cutting the slot. If you must use a hand saw, bore a series of ¼-in. holes close together and then finish the slot with a compass saw.

The centerboard trunk may require a little fitting to the keelson. Fit each piece in place individually, then clamp the assembly in place in the boat and run in a few screws so that the pieces later will go back together the same way.

Be sure, *now*, to fasten the knees to the sides of the trunk because these must be fastened from the inside. Then finish the inside of the trunk with bottom paint (except for the gluing surfaces) and glue and fasten it together. Sand it ready for varnishing. You now are ready for the installation.

Bore screw holes through the keelson, apply bedding compound, and secure the trunk in place with furniture clamps or half a dozen screws. It now is worth the effort to turn the boat over so that you can work down when putting in the rest of the screws, rather than up from underneath.

With a disk sander, plane, rasp, or file, give a slight bevel to the edges of the hull plies along the centerboard slot so that the centerboard will not rub paint off at this point. Seal these edges with a coating of Dolphinite and later finish them with bottom paint.

The transom requires beveling. Establish its position, plumbing and squaring it. Trim off the top of the keelson so that the transom does not have to be notched over it. Cut off the ends of the inwales at the forward face of transom. Bore holes from the inside, apply bedding compound, and fasten from the outside, countersinking so that the screw heads will be just under flush.

This is a good time to install the floor slats. Mark their locations, leaving a space of about 4 in. between the sections under the centerboard thwart. Glue and fasten with ⅝-in. No. 4 screws. Some Thistle sailors prefer to use rubber matting or nonskid paint instead of the floor slats.

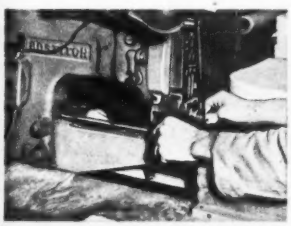
The seats lie in a horizontal plane in the boat and therefore if the boat is level, a level can be used throughout for establishing their positions. The centerboard thwart establishes their heights, so fasten this in place and make sure it is level. Clamping the outer seat pieces to the thwart, level them fore and aft and mark with a light pencil line the under and upper edges of contact against the hull.

The tops of the supports for this seat then should meet the lower lines. The supports should be plumb as well as square across the boat. A straight edge held from one support to the correspoding opposite one insures this. Holding the supports in place, mark pencil lines both sides of them on inside of hull.

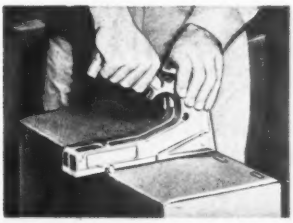
(Continued next month)

HOW BOSTITCH MAKES THESE JOBS EASY

Tacking upholstery to chair seat, Bostitch T5AD Air Driven Tacker lets operator do it with one hand. Just squeeze, and Bostitch Tacker shoots staple into work. Drives staples almost as fast as operator can guide tacker . . . four times faster than hammer and tacks. Does the job faster and with less effort. Eliminates mashed fingers, damaged work, sore mouth from holding tacks.



Attaching pad to chair seat, Bostitch Stitcher takes only one-third the time. Does a neater, cleaner job. Stitcher makes its own staples inexpensively out of steel wire. Surer, stronger, easier than hammer and tacks. And they are only one-tenth the cost.



Sealing cartons, Bostitch Autoclench does job three times faster than tape and glue. Makes strong, neat seal with wire staple. Ingenious action clinches on inside entirely from the outside. Eliminates mess of water, smell of glue, cost of tape.

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How The Circus Is Born

[*Continued from page* 68]

its season at Madison Square Garden in New York, Dick labored in a hot Manhattan apartment creating the spec, or the "spectacular" that opens the show.

Working with drawings, he designed the acts. Next came the tough part. How to squeeze 1,700 people into three rings and have performers in the parade for less than 12 minutes. That was a problem.

To set the timing, Dick carved some wooden horses out of pine wood. He bought some elephants, horse-drawn surreys, toy clowns and three rings. He set them up on a card table in his apartment. Then he began fitting the drama, the humor, the three-ring activities into the required time. He shifted rings. He tossed around elephants and clowns. Finally, he finished the job.

At rehearsals in Sarasota, Florida, Dick put his creation to work.

Mr. North was so pleased with the results that he asked Dick to sign a contract for life. He did. Now he plans the circus a year in advance and it's all born in his New York apartment, with cartoons and toy animals and a miniature three-ring circus.

Staging the circus is just one of Dick Barstow's many activities. While doing the choreography for the Broadway hit, New Faces, he simultaneously staged a personal appearance act for Dorothy Lamour and wrote and staged a routine for Roberta Quinlan, the radio and TV thrush.

In the winter he directs and stages mammoth touring ice shows. He also did the choreography for Cecil B. DeMille's, The Greatest Show On Earth.

Born in Ashtabula, Ohio, with a club foot, Dick Barstow out of necessity had to do continuous toe exercises. He became such an expert in standing on his toes that he developed the first toe-tap dance on stairs.

When just a youngster, Ripley tabbed him the Iron-Toed Boy because in Boston he ran 4½ miles on his toes. Dick used to leap from high stands landing on his toes, a feat unequalled by any other performer. He became a dancer and toured the world. Recently he created a revolutionary toe skate for ballet dancers which may very well make the ballet more mobile.

Now 20th Century-Fox has signed Dick to a seven-year contract as choreographer and director.

What will Dick Barstow do next? He doesn't know. Right now he's handling four assignments simultaneously. And the best part of it is, he will consummate each one to perfection. •

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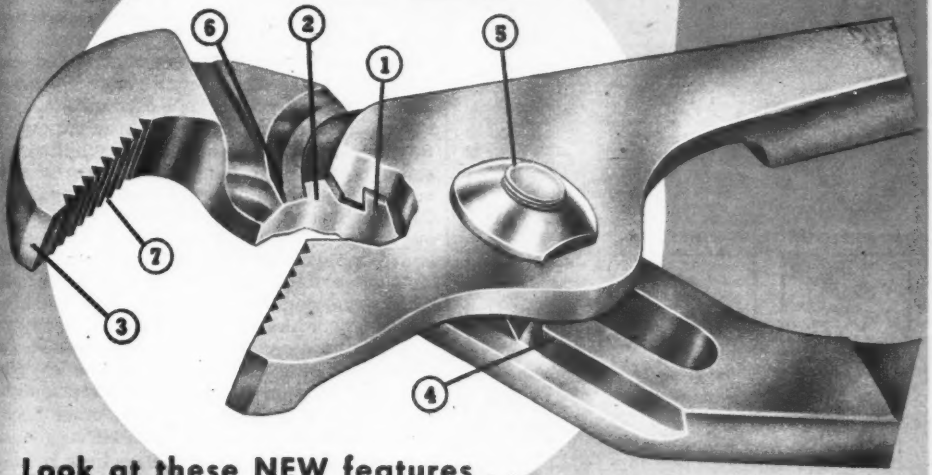

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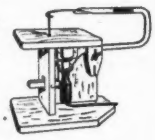

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Beat High Costs

[*Continued from page* 61]

He did. Now he directs the Gilman Service Bureau heading a force of more than 30 process servers and one of the largest agencies of its type in the United States. "Not only that," says Gilman, "I also learned so much about investigative work that I soon qualified for one of the toughest things to get in New York State—a private detective's license."

The one big question, of course, is how to get a part-time job.

Naturally, you can advertise for one or watch the help-wanted columns in newspapers and this magazine. In the larger cities and towns, though, there are some employment agencies that specialize in getting part-time help. These usually can be found under the employment agency category of classified telephone books alongside such typical terms as *temporary* and *part time*.

A good idea, anyway, say many experts, is to make the rounds of various employment agencies, tell them what you're interested in and fill out an application blank, specifying part-time work only. It should not cost you anything. Most legitimate agencies don't charge application fees. They get a commission when they get you the job. Sometimes employers, eager to get part-time workers, pay the commission themselves.

A lot, however, depends on your own ingenuity. There are many industries that normally rely on part-time workers to meet an important part of their personnel needs. Take Joseph Gilman's process serving business, for example. In any state where the law requires that a summons must be handed over in person, you're bound to find an agency or law firm just begging for honest and reliable men to serve summonses for them at anywhere for 75 cents to $1 for each one handed out successfully. Men with cars and who know their way around can earn a day's pay in a few hours.

Look around. Inquire. Keep your eyes and ears open. Let people know you're interested in part-time work. Many movie houses and theatres, for example, are only open part of the day and hire part-time employes almost exclusively.

If you have a car, a real estate agency might hire you to take prospective customers out to look at homes on weekends. This is especially true for new building developments. It could be a good way of learning real-estate salesmanship.

If you have a skill with office machines or like to add figures, look into banks and various financial institutions. Many do their bookkeeping and record checking at night. They

need part-time help because it's hard to get regular employes to work nights.

Department stores are in constant need of sales clerks, demonstrators, office help and stockroom workers, especially around such holiday times as Christmas and Easter seasons or during special sales.

More and more restaurants and cafeterias are delivering coffee and sandwiches to office workers. They need part-time help especially between 10 a.m. and 2 p.m. It might be an opportunity to get past reception desks you've never been able to crack before.

If you should be eyeing the possibility of a complete occupational change, however, don't just do it by hearsay or on the advice of well-meaning friends. Investigate the field thoroughly. If you don't want to go in too much for vocational exploration through part-time jobs, an excellent source of help for you is the Bureau of Labor Statistics which has been putting out a pile of booklets giving the requirements and predicting futures in a wide range of occupations. These are based on intensive investigations and are written by experts.

Let's say, for example, that you're a radio repairman and you think that right now things don't look too good for that field. You want to switch to the spectacular electronics field. Write to the Bureau of Labors Statistics in care of the Department of Commerce, Washington 25, D. C. and ask for their Employment Outlook booklet in the radio-electronics field. They'll tell you if they have one, how much it costs and you can order it from the Government Printing Office in Washington.

But let's say you're giving thought to starting a part-time business of your own. Maybe you want to make concrete blocks for homeowners. Write to Bureau of Foreign and Domestic Commerce, also in the Department of Commerce, Washington, and ask for the booklet, Will Making Concrete Blocks Pay In Your Community? You'd get one, too, odd as it sounds. This bureau has been preparing a long list of booklets. They're all under the general heading, Establishing and Operating a Business. If you want a free complete list of businesses they have booklets on, just drop a postcard to them. The most expensive booklet on the current list costs $1; most run under 50 cents.

Whether it's to go into your own spare-time business, or to get a part-time job, whether it's for extra cash to beat the high cost of living or a chance to explore new vocations, there's virtually no end to the list of possibilities on what you can do to make your spare time pay. You may not get rich or be a success in 24 hours, but you can be sure you'll have a lot of fun trying and make money besides. •

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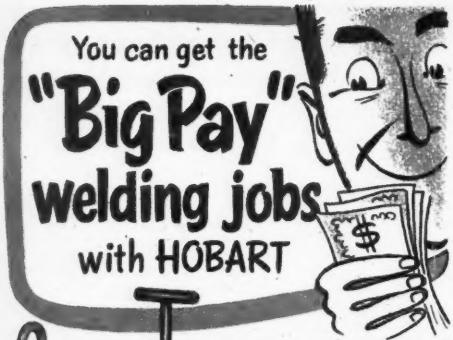

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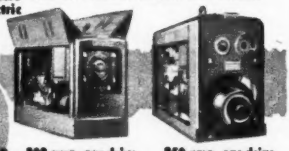

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War That Never Ends

[*Continued from page* 67]

dangerous jungle disease known as scrub typhus, or tsutsugamushi, an ailment of the typhus group rampant in Japan, Formosa and the islands of the South Pacific. It kills up to 60 per cent of the persons it strikes.

Scrub typhus, also known as Japanese river fever, is transmitted by mites in areas where filth favors their breeding and growth. It is characterized by headaches, fever and severe prostration, delirium and a measles-like rash. It frequently causes complications such as broncho-pneumonia and gangrene.

Those were the perils facing a couple of American entomologists, Dr. Cornelius Philip of the U. S. Public Health Service and Maj. Robert Traub of the Army, when they struck out boldly into the Malayan brush to find infected areas in which to conduct their tests. They found two sections where the mites abounded and went to work.

A group of volunteers was selected. With the entomologists, they went into the disease-laden areas and waited to be bitten. One half of the volunteers were inoculated beforehand with chloromycetin, one of the famous wonder-working antibiotics. The other half received no drug.

Tension became almost intolerable during the days that followed. Finally the results could be counted and they were spectacular. Fully 70 per cent of those who were *not* given the antibiotic came down with scrub typhus. But not one case occurred among those who were given the injection!

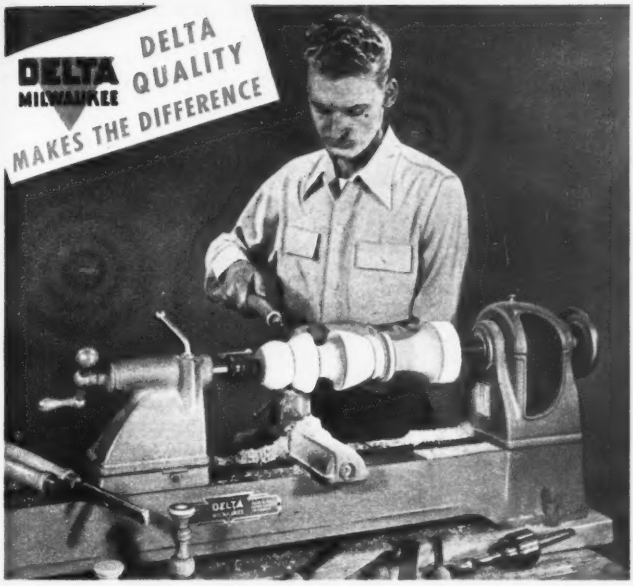
And then came the second climax almost on top of the first. All of the sick persons were promptly treated with chloromycetin—and cured!

Leprosy, or Hansen's disease, the ancient and fearsome infection which ulcerates hands and ears, withers flesh, thickens skins and deforms bones, still spreads its horror in the tropics and subtropics especially in India, Africa, China, Malaya, the Pacific Islands, West Indies and the northern part of South America. It is caused by a bacillus which enters the body through the nose or skin and approaches stealthily.

The incubation period may be as short as a few weeks or no symptoms may appear for as long as 40 years.

Then, when it takes hold, the skin changes in color and thickness, nodules appear, hair drops out. Sometimes the eyelids cannot be closed so that the eyes become hard and dry, resulting in blindness. Sometimes the nose caves in. Sometimes the fingers and toes drop off due to the formation of ulcers.

[*Continued on page* 158]



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A fine lathe means you can do work better, faster and easier. Yet a high quality machine doesn't mean high price—not when it is DELTA. Be sure to see this tool at your Delta Dealer's. Note its many quality features and its wonderful-value price.

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Max. Depth of Cut.....2½"
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Rip to Center of.....19" panel
With one extension.....36½" panel

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War That Never Ends

[*Continued from page* 156]

Methodical treatment with chalmoogra and hydnocarpus oils and the establishment of leper refuges have lessened its terrors somewhat. When more than ten years elapse after the onset, leprosy is virtually incurable. But chances are excellent if treatment is begun shortly after the symptoms appear.

Now comes sensational news for the nations where leprosy is still widespread. From Durban, South Africa, announcement has just been made of a new drug which has brought about a phenomenal number of cures. It is sulphotrone, one of the sulphone drugs, known in the U. S. as diaminin. After three years' use, a total of 74 per cent of the patients at Mkambati Institution in Pondolond have been discharged. At Emjanyan, 57 per cent have been cured.

Medical authorities are breathless with excitement because another scourge may soon be scratched off the list of world-wide terrors.

Yaws, strange-sounding name, is an even stranger disease. It was borne to this Hemisphere by the first shipment of African slaves who came to Haiti 400 years ago. As recently as ten years ago it was among the front-rank challenges to Western Hemisphere medicine, a disease of many mysteries which in some areas afflicted four-fifths of the population. Yaws causes ugly eruptions all over the body. It does not kill so much as it incapacitates.

And now even yaws is succumbing to penicillin. Reports Dr. Charles R. Rein of the New York University Post-Graduate Medical School, "There is no reason why millions of people throughout the world should be affected with this crippling and disfiguring disease."

And how about those mighty killers, perhaps the most dreaded of all in the entire history of mankind, the plague and cholera?

The plague, variously known as Black Death and bubonic plague, is an acute, infectious disease spread in part by the bites of fleas that have acquired the germ from plague-infected rats. The bubonic type kills up to 90 per cent of its victims after a sudden onset which brings chills, high fever, vomiting, painful swellings and complete prostration. No other disease that man is heir to can compare to it in the devastating effect and profound impression it has left on history. Look what it has done.

In the 14th century, a great epidemic raged unchecked through Europe and destroyed more than one-fourth of the population. In

[*Continued on page* 160]

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War That Never Ends

[*Continued from page* 158]

China, the pestilence swept from town to town and left 13,000,000 dead in its wake. In 1665, Black Death dropped like a pall over London and before it was lifted, half the population had been wiped out.

There were few terrors in history like the great London plague. Ships drifted idly in the harbor as entire crews dropped like flies. Two-thirds of the Oxford student body perished. Whole families were destroyed leaving rich estates with no legal claimants. Wealthy farms became overgrown with weeds as manpower dwindled.

Panic rose to a crescendo as each day bodies were taken from homes and dumped into mass graves. Commerce was at a standstill. Morals deteriorated. Then, slowly, it ebbed.

But the world was in for still another siege and perhaps its story may shock you. A great pandemic reared up once again, appearing first in China in 1894, and has just receded! It spread to India and the Middle East and by 1900 had reached Hawaii, South America and even San Francisco. Between 1896 and 1933, more than 12,000,000 died in India.

Sulfa drugs used with streptomycin and a rabbit serum developed at the University of California's George William Hooper Foundation, have greatly lessened the terrors of the plague. Men like Dr. Robert H. Pollitzer, who has spent years battling the disease in China, have earned the everlasting gratitude of the world's population.

Can the plague ever come to America? It did touch Los Angeles and Oakland, Calif., around the turn of the century in minor outbreaks but was quickly squelched. But since 1949, there have been only four cases in the U. S., and all of them in New Mexico.

The U. S. Public Health Service is fighting unceasingly to guard against spread into this country from Mexico. Dr. Vernon B. Link of the Service declares that since 1937 over 50,000 rodents were trapped and shot in the border countries from San Diego to Kinney County, Tex., and only eight plague-bearing ones were found.

How about cholera, half of whose victims die? Is it over and done with after all the havoc it has caused?

It was just a few years ago that a few cases were discovered in the village of Al Korein, north of Cairo, in Egypt. A shaft of fear cut like a great scythe throughout the country. Memories were fresh of the 1902 cholera epidemic when 35,000 persons perished.

Troops sprang into action as the disease flared up. They sealed off the infected areas.

[*Continued on page* 163]

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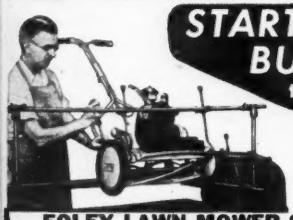

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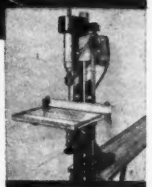

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War That Never Ends

[*Continued from page* 160]

Movie theaters were closed, new water wells dug and 2,000 doctors began the slow and dangerous task of mopping up the pestilence. But more people came down with it every day.

Then the world came to Egypt's help. A U. S. Navy DC-4 roared in from America with enough anti-cholera vaccine for 200,000 persons. Two days later, four more planes arrived and within a short time the disease was fully under control.

What is cholera? It is an infection of the digestive tract which kills chiefly by removing water from the body. The blood becomes too thick to circulate. Modern treatment knocks off the bacteria with sulfa drugs and dilutes the blood with a saline solution.

Cholera is still around but Egypt's narrow escape from wholesale devastation proves that it can be controlled.

Despite the onward march of medical science, there are a number of diseases which are still deep, dark mysteries, diseases which Americans need never fear but which inflict their tortures on peoples far away.

One is ainhum, or barefoot leprosy, an infection caused by a parasite. The arteries leading to the toes gradually harden and, because of the loss of blood supply, the bone becomes atrophied and slowly the toes begin to shrivel and drop off.

Another is Chagas's Disease, or trypanosomiasis, an infection peculiar to some South American countries. There is still no cure. Adults as well as children are affected. It causes swollen throats, irregularities of the heart and even insanity.

And still another is sprue which produces an insidious decay of the entire body. It is caused by invasion of the body by a minute parasitic fungus which renders the victim pale, thin, weak and anemic. Strangely, all of the sufferers are not poverty-stricken natives. School teachers, missionaries and visitors to the tropics rank just as high among those stricken.

These are still the blanks in the pages of medical progress but the others are well-filled with heroism and pace-setting advances. Doctors are not only battling the ailments which face Americans but on a wide, lonely and perilous front they are cutting wide swaths in the ranks of the killers which have dogged civilizations throughout the world.

Unknown to many, history is being made—not by rulers and armies but by men in white, armed only with hypodermic needles and serums, who are fighting The World War That Never Ends. •

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CUSTOM-CRAFT - DEPT. 9 - BUFFALO 7, N. Y.

To The Sea In . . . Ships?

[*Continued from page* 75]

ready to sail, they had a family—a boy of seven and a six-months-old daughter. So they signed both kids on as crew members and hoisted anchor in their 75-foot auxiliary schooner, Constellation. Leaving Grand Rapids on July 15, they reached Montreal on August 21, New York on October 6, and Long Beach, California, a year later. During that year they sailed down the Atlantic Coast, around Cuba, through the British West Indies, through the Canal, down the coast of South America and finally north to California.

With the end of the war, the Navy disposed of thousands of small craft it had requisitioned and some lucky people picked up bargains in boats. J. J. Williams of Jacksonville, Florida, for instance, got a 65-foot two-masted schooner, the Nor'easter, for just $3,000. The elaborately-equipped boat was originally built for radio magnate Atwater Kent in 1923. Williams and five friends planned a four-months cruise of the Caribbean touching at Nassau, Haiti, Puerto Rico, the Virgin Islands, Jamaica, Cuba and Key West. In all they covered 4,000 miles.

Sailing down the Mississippi is a favorite route with many mariners and some do it chiefly on nerve and luck. Looking at the 12-foot, flat-bottomed, homemade raft of the Thomases, father and son, you'd think it couldn't cross the mighty river, much less traverse its length. But Herbert and Jimmy Thomas with 600 pounds of provisions aboard sailed the entire length of the Missouri as well as the Mississippi from Great Falls, Montana to New Orleans in their frail-looking craft.

One of the most thrilling—and hazardous—forms of boating is shooting the rapids. A favorite course for the men who go in for this highly specialized sport is the 666 miles of the Colorado River between Green River, Utah, and Hoover Dam's Lake Mead, in which there are 300 rapids. Running the gamut of those rapids requires almost superhuman strength, skill and stamina.

At the other extreme is the scenic cruise, Tennessee Valley Ho!, dreamed up by Nashville publisher, Silliman Evans. The only stamina required of the cruisers was an ability to weather the "Hospitality Events" which occurred every night along the route. Publisher Evans led the fleet of about 40 boats in the ten-day cruise on the chartered stern-wheeler, the Gordon C. Greene, last of the old Tennessee River packets remaining in service. The 650-mile trip took the yachtsmen from Paducah, Kentucky, to Knoxville, Tennessee.

[*Continued on page* 167]

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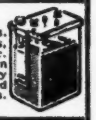

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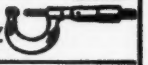

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To The Sea In . . . Ships?

[*Continued from page* 165]

The most unusual cruise in the long history of boating occurred last year. The "boat" was a raft, prophetically named the Lethargia. The route was 1,900 miles from New Kensington, Pennsylvania, to New Orleans. But what made the trip unique was the fact that it was billed by the four members of the crew as a sociological experiment. None of the two men and two girls on the raft was married, and the idea was to ascertain what their reactions to one another would be during the long days of isolation on the raft.

What happened chiefly involved the Lethargia, a craft which turned out to have all the least lovely characteristics of a mule—plus one unknown to a mule: sinkability. Starting out from New Kensington on July 20, the Lethargia drifted sluggishly to Bellaire, Ohio, where it turned over—in the night. The crew lost all their equipment, including money and cameras. Righting the craft and gathering their wits—and what they could salvage—the four adventurers pressed on at the slow creep favored by the Lethargia. Arriving at Memphis on September 24, skipper Mary Ellin McCrady was heard to remark feelingly, "Isn't it a madhouse!" They reached New Orleans on October 21, 99 days after starting. The "sociological experiment" proved beyond the shadow of a doubt that a raft is the slowest possible distance between two points. •

MI Tests The '53 Ford

[*Continued from page* 85]

test hill at the proving grounds there was no distress when I stopped half-way up and started off again.

These Fords have been refined through the years and today's crop is the best in the company's history. Of course, that doesn't mean there isn't a lot of room for improvement and modernizing because there is. Whether Ford comes out next year or the year after with a new engine is hard to say right now. But when they do, you can rest assured it will be right.

In the looks department there are few and minor changes for '53. A new slightly dechromed grille and a new strip of chrome across the rear flank, new tail lights, and the Ford 50th anniversary medallion on the steering wheel, are what you'll see. There are also redesigned door handles and locks. The real big excitement at the Ford proving grounds concerns the 1953 Lincoln, which I also tested, and I'll bring you the story of that one soon. •

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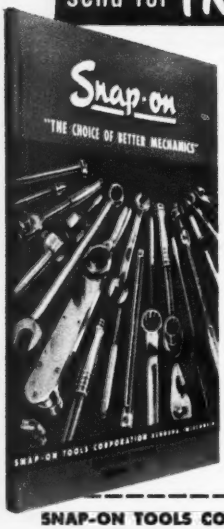

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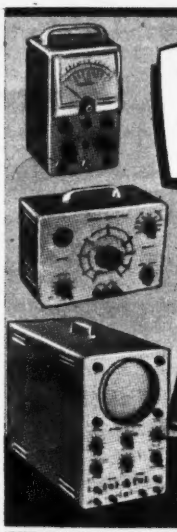

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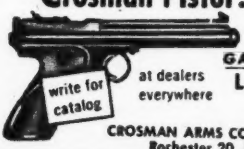

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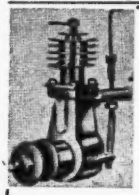

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His Fish Are His Fortune

[*Continued from page 78*]

thought a few sheep might help to clean up the creek basin. He purchased 12 sheep and they removed more vegetation from the area than he and his wife had done. When it came time to market the first crop of wool the sheep helped finance the project, for wool brought $1.25 a pound that year. A dozen sheep still graze around the head of the lake and add to the income.

The hatchery had a capacity of 300,000 eggs. The first batch of eggs was purchased from a commercial hatchery in Montana. Trout eggs hatch in three weeks at 52 degrees temperature and the temperature in Rainbow Lake is 52 degrees most of the year. Mortality rate of young trout fry is usually heavy except under the most ideal hatchery conditions. But Honeyman managed to save about 90 per cent of the hatch and since the lake was virgin water for aquatic organisms on which the trout feed, they grew fast. One year after the first eggs were hatched Honeyman estimated that 100,000 trout ranging in size from eight to 12 inches long were ready to harvest.

He first opened the lake for public fishing during the months of March, April, May and June. He could not raise enough fish to keep the lake open the year around. Later additional hatchery facilities were constructed and arrangements made to purchase fry from a commercial hatchery to augment his stock. The lake is now open for business the entire year and even on stormy, wintry days there are enough paying visitors to maintain a profitable operation.

The lake was a financial success almost immediately. Honeyman charged customers $1.25 a pound for all the fish they could catch—and they always caught more fish than they intended to. Honeyman realized that his sales training as a retail clerk was of no value in this business. People didn't have to be sold on fishing. Customers could bring their own rods or rent outfits from Honeyman for 25 cents. They could bring their own bait or purchase it at the lake.

There were many problems the fish farmer had to solve. Predators of several varieties had also discovered the lake and they were not paying customers. Bull frogs, native to the Columbia river swamps, found the lake ideal living quarters. They compete with the trout for food and even consider the small trout part of their meat supply. They got into the hatchery and holding ponds and gorged themselves with trout fry. It was necessary to cover the hatchery troughs and ponds with wire mesh to keep them out.

[*Continued on page 171*]

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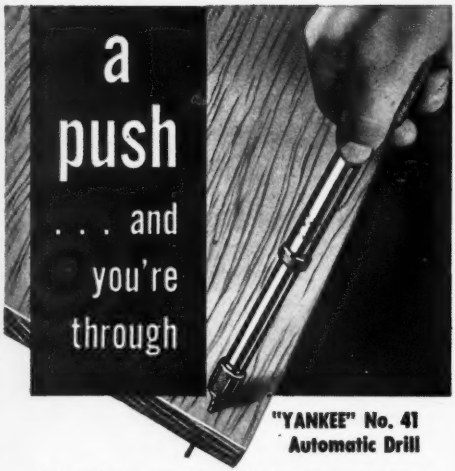

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MIDGET MOTORS MFG. CO., ATHENS, OHIO

His Fish Are His Fortune

[*Continued from page* 169]

It also was necessary to take steps to reduce their population. Since there were several restaurants nearby which purchased frog legs for their menus they had a commercial value. He found that he could control the frog population by rowing around the lake and dipping out most of the frog spawn each spring. Although other fish such as bass, crappy and bluegill feed on tadpoles, trout apparently consider them unfit to eat.

Other predators more easily controlled were fish ducks, otters, mink and raccoon. A western species of water snake, quite rare in the lower Columbia River Basin, decided the lake was home for them also. They were brought under control by rowing around the edge of the lake on hot days and shooting them with a .22 rifle while they sunned themselves on the bank.

Certain song birds also like young trout fry. The Honeymans wonder if there is any other form of life upon which so many animals feed as the delectable rainbow trout.

Last year Honeyman's annual income was nearly $12,000. At Rainbow Lake clubhouse, located on the fishing dock, dinners are served from the regular menu or customers can have their freshly caught trout fried crisp and brown, served with cole slaw, french fries, coffee and hot garlic rolls. Rental income from frozen-food lockers, miscellaneous sales such as sandwiches, coffee, soft drinks, cigarettes and beer help build up the profits.

Although fish farming is not an entirely new idea it offers excellent opportunities for the man who likes outdoor life to get into a profitable business with a small investment. Land suitable for a fish farm is generally unsuited for other types of farming and can be bought for a fraction of the price of good farm land. Competition is now practically nonexistent for the fish farmer.

All parts of the country are not naturally suited to trout raising but some species of game fish such as bass, bluegill and crappy can be raised in several sections of the country. The U. S. Department of Agriculture has a publication entitled Farm Fishponds (Farmers' Bulletin No. 1983) which gives complete information on the construction and maintenance of small fish ponds for profit and recreation. Another U. S. Department of Agriculture pamphlet entitled Techniques of Fishpond Management (Miscellaneous Publication No. 528) contains practical information on raising warm-water game fish. State conservation departments and local county agents can advise which species of fish are most adaptable to individual localities. •

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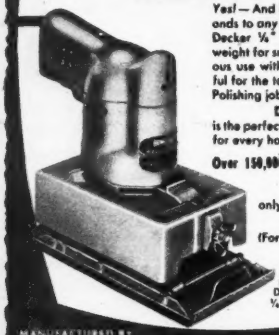

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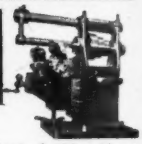

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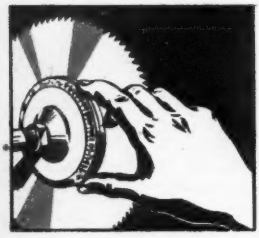

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Have A Bird Dog

[*Continued from page* 92]

amazing speed and stamina. Many hunters who live in city apartments do not have room for a big Pointer, Setter or Weimaraner. But the Brittany can be squeezed in almost anywhere. I have hunted woodcock and grouse over these dogs, as well as Hungarian partridge, and in each instance they turned in an enviable performance. They cannot, of course, turn in as fast a performance as their larger brothers but not every hunter is in the pink of condition and usually the man is tired before the Brittany.

The German Shorthair, a step above the Brittany in size, does not seem as popular in this country as it was formerly although the breed still has a large number of stout supporters. Every Shorthair I've shot over has been of the "plodding" type, which does not mean it was too slow but rather that it was methodical. One of the best pheasant dogs over which I ever hunted was a Shorthair and a more perfect performance would have been impossible. The dog had an unusually fine nose, seemed able to figure out what the pheasant was going to do before the bird itself and when that dog went on point you knew the pheasant was there and would remain until flushed. It also made perfect retrieves, even on birds that ran some distance after being shot down.

The worst argument I have ever heard against the Shorthair involved its color. The dog is rather hard to see in the fall covers for its grizzled brindle seems to merge closely with the background.

The Weimaraner, the really late addition to the hunting scene here, has provided more discussion, some of it heated, than any other sporting dog, and in a very brief time. This dog was almost ruined by publicity, all of it favorable. Intelligent, strong and possessed of an unusually fine nose, the Weimaraner was taken up by many who wanted a dog more for its striking appearance than its work. When the animal reacted quickly to training, the owners started bragging, verbally and in print, with the result that other dog owners either shuddered or walked rapidly away when a Weimaraner fancier appeared. As one well-known dog expert put it: "Most Weimaraners seem to have acquired owners who never before had a dog and they are amazed that a dog can show signs of intelligence."

Despite their large size and really tremendous strength, they are not big-going dogs and strangely enough even the top trainers seem to have failed in their efforts to make them show speed and hunt at the same time.

[*Continued on page* 175]

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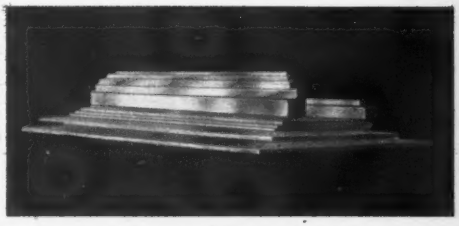

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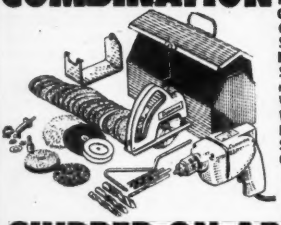

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Telescope Maker's Page

[*Continued from page* 147]

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Have A Bird Dog

[*Continued from page* 173]

For the man who wants a dog who will work close and thoroughly, the Weimaraner is the answer. All of them seem blessed with an unusually keen nose and if you lose a cripple with a Weimaraner you can be almost certain that the bird is not on the ground.

We have neglected to mention the breeds that serve a dual purpose and which are becoming more popular each year: the retrievers. These can be classified into four main breeds: the Labrador, Chesapeake, Golden and Springer. There are a number of others that come under the same purpose category but they are less popular than the four listed. These dogs, being non-pointers, are intended primarily for water retrieving but they are being more widely used on upland game, especially pheasants, grouse and prairie chickens. They do not work too well on quail or Huns and I am not too keen on the manner in which they work grouse. But it cannot be denied that they turn in excellent jobs on pheasants. They work close to the hunter and when properly trained give a clear indication that a bird is at hand. They then flush the bird, usually within gunshot.

For the man who is primarily interested in waterfowl shooting—and now that the season is longer on this game the number of wildfowlers has increased—they are the best answer. Probably no other factor is as important from the conservation viewpoint than the use of a retriever in duck shooting. It just about eliminates the losses due to cripples which is important in most areas.

The Labrador is more widely used in a dual purpose than any of the other four with the exception of the Springer. As water retrievers, both the Lab and the Chesapeake unquestionably top the list. They are big dogs and some of the latter are really tremendous. They can do their job well under bad conditions of wind and water and do not suffer when the cold weather prevails.

The Golden is making a serious bid for attention these days and many insist that it makes a better combination of pet-and-retriever than the Lab or Chesapeake but certainly not more so than the Springer.

My own preference among retrievers is the Springer, of which I have three. They are friendly, intelligent, normally easy to train, do not take up too much room and turn in an excellent performance on both pheasants and waterfowl. However, I suppose my only real argument is that I "just like the breed."

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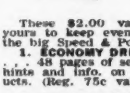

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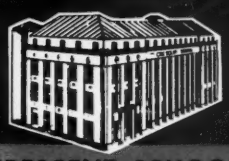

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